



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

SHAILEN P. BHATT
SECRETARY

February 3, 2012

Mr. Lawrence B. Lank
Director
Sussex County Planning and Zoning Commission
P.O. Box 417
Georgetown, DE 19947

Dear Mr. Lank:

The enclosed Traffic Impact Study (TIS) conditions letter for the **Corrado Commercial Property** (SSR8811) 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 prepared the TIS so as 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 the TIS and concurs with the recommendations found in the enclosed letter. We are providing it to you in fulfillment of our joint agreement regarding the review of TIS.

If you have any questions concerning this letter or the attached conditions letter, please contact me at (302) 760-2109.

Sincerely,

T. William Brockenbrough, Jr.
County Coordinator

TWB:km
Enclosure
cc with enclosure:

Ms. Constance C. Holland, Office of State Planning Coordination
Mr. John E. Tracey, Young, Conaway, Stargatt & Taylor, LLP
Mr. Andrew J. Parker, McCormick Taylor
Mr. Mir Wahed, Johnson, Mirmiran, and Thompson
DelDOT Distribution



DeIDOT Distribution

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Jeffrey Reed, South District Engineer, Maintenance and Operations
Lisa Collins, Service Development Planner, Delaware Transit Corporation
J. Marc Coté, Subdivision Engineer, Development Coordination
Anthony Aglio, Bicycle and Pedestrian Coordinator, Statewide & Regional Planning
Leonard J. Massotti, Sussex Subdivision Engineer, Development Coordination
John T. Fiori, Subdivision Manager, Development Coordination
Troy E. Brestel, Project Engineer, Development Coordination
W. Paul Hogge, Project Engineer, Development Coordination

February 2, 2012

Mr. William Brockenbrough, Jr.
County Coordinator
DelDOT Division of Planning
P.O. Box 778
Dover, DE 19903

RE: Agreement No. 1404
Traffic Impact Study Services
Task No. 59B – Corrado Commercial Property

Dear Mr. Brockenbrough,

McCormick Taylor has completed the Traffic Impact Study (TIS) for Corrado Commercial Property. This TIS was assigned as Task Number 59B. McCormick Taylor prepared the report in a manner generally consistent with DelDOT's *Standards and Regulations for Subdivision Streets and State Highway Access*.

The TIS evaluates the impacts of the Corrado Commercial Property, a commercial development proposed to be located on the southeast corner of Delaware Route 1 (Coastal Highway / Sussex Road 14) and Holland Glade Road (Sussex Road 271), just north of the City of Rehoboth Beach in Sussex County, Delaware. The proposed development would consist of a 64,250 square-foot discount superstore, 10,500 square feet of strip retail space and 11,450 square feet of restaurant space, all on approximately 10 acres of land. Three access points are proposed: two on Holland Glade Road and one rights-in only access along northbound Delaware Route 1. The land is currently zoned as C-1 (General Commercial) and CR-1 (Commercial Residential) in Sussex County, and no changes to the zoning are currently proposed. Although the design year for TIS analysis purposes was established as 2016, construction is currently anticipated to be complete by spring 2013.

DelDOT currently has three relevant projects in the study area. The SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. 26-125-01), recommended by the SR 1 Pedestrian Study, will provide sidewalks along Delaware Route 1 to enhance pedestrian safety in the beach area. The project will also provide new pedestrian crossings of Delaware Route 1 at numerous locations. In the immediate vicinity of the Corrado Commercial Property, the SR 1 Pedestrian Improvements project includes sidewalk along the northbound Delaware Route 1 site frontage (connecting to existing sidewalks), a crosswalk across Holland Glade Road, and a crosswalk with pedestrian signals across Delaware Route 1 just south of Holland Glade Road (in front of the Corrado Commercial property). Sidewalks and ADA compliant curb ramps are planned through a stretch of Delaware Route 1 near the proposed development. New crosswalks and channelization islands are planned at the intersections of Delaware Route 1 & Shuttle Road (Sussex Road 273D) and Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance. Pending funding availability, construction of this DelDOT project will not begin until at least July 2013.

The second project is Destination Station (State Contract No. T201012501), which will result in improvements on the site of Delaware Transit Corporation’s Rehoboth Park & Ride located on Shuttle Road just west of Delaware Route 1. Destination Station is planned as a visitor and educational center for the beach resorts. This first phase of this project prepared the site for the future construction of the visitor center. The improvements consisted of constructing new site entrances, reconfiguring parking areas and adding sidewalks along the property frontage. The site-preparation phase of the project was completed in the spring of 2011. The schedule for the construction of the visitor center itself is unknown at this time.

The third project is the Beach Area Park and Ride project (State Contract No. 26-125-02). This is a study of potential park and ride lot locations in the general Rehoboth Beach-Lewes-Dewey Beach area. The purpose of the study is to determine the need for, and potential locations of, a new park and ride facility or several satellite facilities. The study includes evaluating ways to further improve and enhance the existing Rehoboth Park and Ride facility. Recommendations of this study would serve to improve pedestrian and bicycle safety and transit services in the beach area. No specific projects have yet been identified, and the schedule is unknown at this time.

Additionally, regarding DelDOT’s Hazard Elimination Program (HEP) (formerly Highway Safety Improvement Program or HSIP), the intersection of Delaware Route 1 and Shuttle Road is within Site F of the 2009 HEP. The HEP committee notes considerable peak hour queuing at this intersection. The committee recommends a number of signing and pavement marking improvements at the unsignalized intersections and driveways along Shuttle Road west of Delaware Route 1, but does not recommend specific improvements for the intersection of Delaware Route 1 and Shuttle Road. They note that the signalized intersection will be improved as part of DelDOT’s SR 1 Pedestrian Improvements project.

Based on our evaluation, 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:

Table 1. Deficient Facilities under DelDOT LOS Standards

<i>Intersection</i>	<i>Situations for which deficiencies occur</i>
Delaware Route 1 and Sea Air Avenue / Tanger Outlets Seaside Entrance	2016 Saturday with Corrado Commercial Property
Delaware Route 1 and Shuttle Road	2016 Saturday without and with Corrado Commercial Property

The intersections of Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance and Delaware Route 1 & Shuttle Road each exhibit LOS deficiencies under future conditions during the summer Saturday peak hour. Other than the improvements described below in Item Nos. 8-9, we do not recommend additional improvements be implemented by the developer at these intersections. The improvements required to fully correct the summer Saturday LOS deficiencies

at these intersections (i.e., removing the bus/bike designation of the right lanes along Delaware Route 1 or keeping the designation and widening southbound Delaware Route 1 to include a fourth through lane for general traffic) cannot be considered a reasonable developer improvement project. However, we recommend modifying the existing turn lanes at these intersections to accommodate 95th percentile queue lengths, to the degree that such modifications are feasible, as described below in Item Nos. 8-9. In some cases, the desired turn lane lengths may be not be feasible due to existing and/or proposed upstream intersections, turn lanes, driveways, pedestrian facilities, and/or sign structures.

Furthermore, the intersection of Delaware Route 1 and Shuttle Road has a nearby existing sign structure spanning the southbound approach of Delaware Route 1 with a support in the median. This sign structure is located approximately 335 feet north of the stop bar. Currently, there are lengthy queues in the southbound left-turn/u-turn lanes, and these would get much longer in the future under the existing configurations of intersections along Delaware Route 1. To address this issue, two possible solutions would be to either move this sign structure further north (to a location agreeable to DelDOT) or to replace it with a structure that completely spans Delaware Route 1 with no support in the median, at which point it may be feasible to lengthen the dual southbound left-turn lanes. It was determined that either of these solutions would be very costly and still would not result in satisfactory traffic operations or accessibility along the Delaware Route 1 corridor. Instead, it was determined that the intersection of Delaware Route 1 and Holland Glade Road should be improved to become a partial access signalized intersection, as described below in Item Nos. 6-7, which would give southbound Delaware Route 1 motorists direct access to Holland Glade Road and would significantly reduce southbound u-turn volumes at Shuttle Road. Under this solution, the existing southbound left-turn lanes could accommodate the projected queues, and the sign structure could then remain in its existing location.

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 construct the rights-in-only site entrance on northbound Delaware Route 1. Right turns from northbound 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 internal entrance driveway.

2. The developer should construct the western site entrance on Holland Glade Road. This site entrance should align with the existing Tanger Outlets Seaside Entrance on Holland Glade Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Holland Glade Road	One shared through/left-turn lane	One shared through/left-turn lane and one right-turn lane
Westbound Holland Glade Road	One shared through/right-turn lane	One shared left/through/right-turn lane
Northbound Western Site Entrance	Approach does not exist	One shared left/through/right-turn lane
Southbound Tanger Outlets Seaside Entrance	One shared left/right-turn lane	One shared left/through/right-turn lane

The right-turn lane on the eastbound approach of Holland Glade Road should be extended to Delaware Route 1, where the upstream end of the lane would originate as the second receiving lane needed for the proposed two left-turn lanes from southbound Delaware Route 1 to eastbound Holland Glade Road, as described in Item No. 6.

3. The developer should construct the site truck entrance (eastern site entrance) on Holland Glade Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Eastbound Holland Glade Road	One through lane	One shared through/right-turn lane
Westbound Holland Glade Road	One through lane	One shared through/left-turn lane
Northbound Site Truck Entrance	Approach does not exist	One shared left/right-turn lane

4. The developer should construct the sidewalk along the northbound Delaware Route 1 site frontage (connecting to existing sidewalks), a crosswalk across Holland Glade Road, and a crosswalk with pedestrian signal across Delaware Route 1 just south of Holland Glade Road. This item should be subject to further review as plans for the development and DelDOT's *SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements Project* continue to advance. DelDOT should provide match lines where the DelDOT project and the subject development should connect. As applicable, DelDOT should require other developers to participate in the cost of the crosswalks and associated signals. To the extent that the signals address existing needs, DelDOT should participate in their cost.
5. The developer should dedicate right of way to DelDOT as needed for DelDOT's *SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements Project*. The

developer should coordinate with DelDOT’s Subdivision Section to determine right of way needs.

6. In conjunction with the improvements noted in Item No. 4, the developer should coordinate their efforts with DelDOT to improve the intersection of Delaware Route 1 and Holland Glade Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Westbound Holland Glade Road	One right-turn-only lane	One right-turn-only lane
Northbound Delaware Route 1	Three through lanes and one bus/bike/right-turn lane	Three through lanes and one bus/bike/right-turn lane
Southbound Delaware Route 1	Three through lanes and one bus/bike/right-turn lane	Two left-turn lanes, three through lanes, and one bus/bike/right-turn lane

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

Approach	Left-Turn Lane(s)	Right-Turn Lane
Westbound Holland Glade Road	N/A	N/A
Northbound Delaware Route 1	N/A	N/A (shared with through bus/bike lane)
Southbound Delaware Route 1	470 feet* (two lanes)	N/A (shared with through bus/bike lane)

* turn-lane length based on storage length per queuing analysis, but length is limited by proximity to the existing left-turn lanes on northbound Delaware Route 1 at Sea Air Avenue (taper begins approximately 200 feet north of Holland Glade Road)

Additionally, a second receiving lane is needed along eastbound Holland Glade Road, which should also serve as the exclusive eastbound right-turn lane for the proposed western site entrance as described in Item No. 2.

The developer should coordinate their efforts with DelDOT to determine design details and implementation of these improvements.

7. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Delaware Route 1 and Holland Glade Road. The agreement will cover improvements noted in Item No. 6, as well as improvements to be constructed as part of DelDOT’s *SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements Project* (see Item No. 4 above). The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT’s

discretion. Other developers may enter into a traffic signal agreement for this intersection as well. The developer should coordinate their efforts with DelDOT on the implementation and equitable cost sharing of the traffic signal.

8. In conjunction with the improvements noted in Item No. 6, the developer should coordinate their efforts with DelDOT to improve the intersection of Delaware Route 1 and Sea Air Avenue / Tanger Outlets Seaside Entrance by modifying the lengths of turn lanes at the intersection. As many as six (6) existing turn lanes may need to be modified on the approaches to the intersection, in some cases lengthened to the maximum extent possible.

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

Approach	Left-Turn Lane(s)	Right-Turn Lane
Eastbound Sea Air Avenue	215 feet* (exclusive left-turn lane)	210 feet*
Westbound Tanger Outlets Seaside Entrance	285 feet** (existing turn lane length is adequate)	300 feet***
Northbound Delaware Route 1	560 feet**** (two lanes)	N/A (shared with through bus/bike lane)
Southbound Delaware Route 1	585 feet*** (two lanes)	N/A (shared with through bus/bike lane)

- * turn-lane length based on storage length per queuing analysis, but length is limited by proximity to existing upstream business driveway located approximately 150 feet from the existing stop bar
- ** turn-lane length based on storage length per queuing analysis, but existing turn lane length is adequate
- *** turn-lane length based on storage length per queuing analysis
- **** turn-lane length based on storage length per queuing analysis, but length is limited by proximity to the proposed left-turn lanes on southbound Delaware Route 1 at Holland Glade Road (intersection located approximately 700 feet from the existing stop bar)

The developer should coordinate their efforts with DelDOT to determine design details and implementation of these improvements. Coordination between the developer and DelDOT thus far has determined that only the southbound left-turn lanes can be improved to meet the initial recommended minimum turn-lane length. All other turn lanes have already been improved to the extent possible.

9. The developer should coordinate their efforts with DeIDOT to improve the intersection of Delaware Route 1 and Shuttle Road by modifying the lengths of turn lanes at the intersection. As many as ten (10) existing turn lanes may need to be modified on the approaches to the intersection, in some cases lengthened to the maximum extent possible.

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

Approach	Left-Turn Lane(s)	Right-Turn Lane
Eastbound Shuttle Road	600 feet* (two exclusive left-turn lanes)	360 feet*
Westbound Shuttle Road	325 feet** (two lanes)	655 feet**
Northbound Delaware Route 1	515 feet*** (two lanes)	N/A (shared with through lane)
Southbound Delaware Route 1	275 feet**** (two lanes)	N/A (shared with through bus/bike lane)

- * turn-lane length based on storage length per queuing analysis, but length is limited by proximity to existing upstream business driveways located approximately 225 feet from the existing stop bar
- ** turn-lane length based on storage length per queuing analysis, but length may be limited by proximity to the existing upstream intersection with Rehoboth Avenue Extended located approximately 90 feet from the existing stop bar
- *** turn-lane length based on storage length per queuing analysis, but taper length is limited by proximity to the existing upstream median sign structure located approximately 590 feet from the existing stop bar
- **** turn-lane length based on storage length per queuing analysis, but taper length is limited by proximity to the existing upstream median sign structure located approximately 335 feet from the existing stop bar

The developer should coordinate their efforts with DeIDOT to determine design details and implementation of these improvements. Coordination between the developer and DeIDOT thus far has determined that the Delaware Route 1 approaches and the eastbound Shuttle Road approach have already been improved to the extent possible. Improvement to the westbound Shuttle Road approach may be possible if the owner of that property is amenable to the work being done. DeIDOT should require a good faith effort and documentation from the developer in this regard.

10. 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. The existing bike lanes on the shoulders of Holland Glade Road in the vicinity of the site should be maintained.

- b. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of the right-turn lane added to Holland Glade Road.
- c. Where the right-turn lane is added to Holland Glade Road, 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.
- d. 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.
- e. Utility covers should be made flush with the pavement.
- f. Covered bike parking should be included near the storefront entrances to be included within this development.
- g. A 15-foot wide easement from the edge of the right-of-way shall be dedicated to DelDOT along Holland Glade Road from Delaware Route 1 to the western site entrance of the Epworth United Methodist Church property. The developer should first acquire easements as needed for the land east of the Corrado Commercial property (from the Corrado property line to the church driveway, a distance of approximately 250 feet), on parcels currently owned by the State of Delaware and Epworth United Methodist Church. Within this 15-foot wide easement, a minimum of a ten-foot wide multi-use path should be constructed from the future pedestrian crossing of Delaware Route 1 to the western site entrance of the Epworth United Methodist Church property. The multi-use path should have a minimum of a five-foot buffer from the roadway and should meet current AASHTO and ADA standards. At the eastern end, the multi-use path should connect to the church driveway. At the western end, the multi-use path should connect to the future pedestrian crossing of Delaware Route 1 and to the future sidewalk along the Delaware Route 1 site frontage.
- h. A 15-foot wide easement from the edge of the right-of-way shall be dedicated to DelDOT within the site frontage along Delaware Route 1. Within this easement, 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. At the northern end, the sidewalk should connect to the future multi-use path along the Holland Glade Road site frontage. At the southern end, the sidewalk should connect to the existing sidewalk along Delaware Route 1.
- i. A crosswalk across Holland Glade Road should be constructed at the intersection with Delaware Route 1. This crosswalk should connect the existing sidewalk on the Tanger Outlets Seaside site frontage to the future sidewalk along the Corrado Commercial Property site frontage.
- j. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- k. 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 and to adjacent parcels where applicable.

- l. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to eliminate vehicular overhang onto the sidewalk.
- m. The developer should coordinate their efforts with the Delaware Transit Corporation (DTC) regarding the possibility of adding a bus stop at this location. An ADA-compliant 8' x 5' concrete pad should be installed at an appropriate location in front of the development along northbound Delaware Route 1. Internal sidewalks should be connected to this bus stop and parking facilities (racks or lockers) for bicyclists should be included. The developer should coordinate their efforts with the DTC regarding the details and implementation of the transit-related improvements.

Improvements in this TIS are 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 study 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 regarding 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 TIS.

Sincerely,
McCormick Taylor, Inc.



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

Enclosure

General Information

Prepared by: McCormick Taylor, Inc.

Prepared for: George, Miles & Buhr, LLC

Tax parcels: 334-13.00-325.08

334-13.00-325.14

334-13.00-325.15

334-13.00-325.28

Project Description and Background

Description: The proposed development would consist of a 64,250 square-foot discount superstore, 10,500 square feet of strip retail space and 11,450 square feet of restaurant space.

Location: Corrado Commercial Property is proposed to be located on the southeast corner of Delaware Route 1 (Coastal Highway / Sussex Road 14) and Holland Glade Road (Sussex Road 271), just north of the City of Rehoboth Beach in Sussex County, Delaware. **Figure 1** shows a site location map.

Amount of land to be developed: approximately 10 acres of land

Land use approval(s) needed: Subdivision approval. The land is currently zoned as C-1 (General Commercial) and CR-1 (Commercial Residential) in Sussex County, and no changes to the zoning are currently proposed.

Proposed completion date: Construction is currently anticipated to be complete by spring 2013. At the TIS scoping meeting, the design year for analysis purposes was set as 2016.

Proposed access locations: Three access points are proposed: two on Holland Glade Road and one rights-in only access along northbound Delaware Route 1.

Daily Traffic Volumes (from DelDOT Traffic Summary):

- 2009 Average Annual Daily Traffic on Delaware Route 1: 53,028 vpd
- 2009 Average Annual Daily Traffic on Holland Glade Road: 1,662 vpd

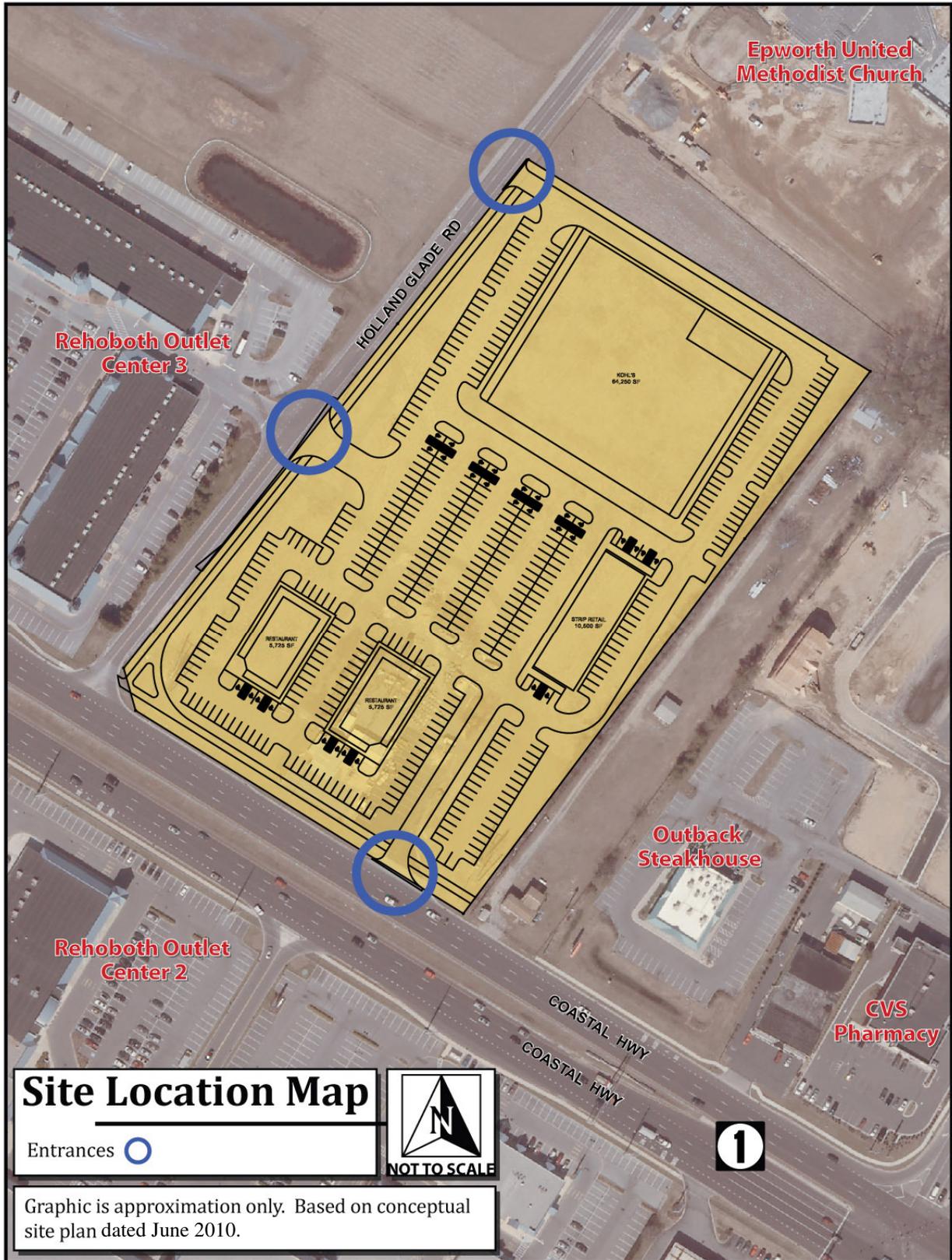


Figure 1 – Site Location Map

Livable Delaware

(Source: Delaware Strategies for State Policies and Spending, July 2004)

Location with respect to the Strategies for State Policies and Spending Map of Delaware:

The proposed Corrado Commercial Property is located within Investment Level 2 and Investment Level 3 and within the Environmentally Sensitive Developing Area.

Investment Level 2

These areas, generally adjacent to Investment Level 1 Areas, include less developed areas within municipalities, rapidly growing areas that have or will have public water and wastewater services, and may include smaller towns, rural villages, and suburban areas. These areas typically include single-family detached housing developments, commercial and office uses serving primarily local residents, and a limited range of entertainment, parks and recreation, cultural and institutional facilities.

In Investment Level 2 Areas, state investments and policies should be based on available infrastructure to accommodate orderly growth, encourage departure from the typical single-family-dwelling developments, promote a broader mix of housing types and commercial sites, and encourage development that is consistent with the character of the area. Transportation projects should expand or provide roadways, public transportation, pedestrian walkways, bicycle paths, and other transportation modes that manage flow, support economic development efforts, and encourage connections between communities and the use of local streets for local trips.

Investment Level 3

These areas are portions of the county designated for growth, development districts, or long-term annexation. Areas classified as an Investment Level 3 will be considered for state investing after the Level 1 and 2 areas are substantially built out or when the facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. Many of the areas within the Investment Level 3 designation include important farmland and natural resources along with portions of roadways that are designated for corridor capacity protection. Therefore the character pattern and timing of growth along with federally mandated air and water quality goals should be considered on a case-by-case basis for areas within this designation.

In Investment Level 3 Areas, the state will continue to invest in the regional roadway network and roadway safety while continuing to protect the capacity of major transportation corridors. Roadway improvements to support new development are not encouraged in Investment Level 3 and funds will not be allocated for these types of improvements until they have been allocated to Level 1 and 2 areas.

Environmentally Sensitive Developing Areas

Environmentally Sensitive Developing Areas are defined as a Developing District with special environmental design and protection requirements. New regulations are in place in these areas to control the density of development, preserve open space and valuable habitat and to prevent

excessive levels of sediments and nutrients in waterways. Regulated areas include Indian River, Indian River Bay and Rehoboth Bay. Residential Planned Communities and Village Style development is encouraged in these areas to provide open space and protect habitat. If a central wastewater system is provided, residential density would be permitted up to the maximum allowable density of the underlying zoning districts. Industrial uses in these areas are regulated by the Delaware Coastal Zone Act, however they do not regulate commercial, residential warehousing or distribution activities.

Proposed Development’s Compatibility with Livable Delaware:

The proposed Corrado Commercial Property falls within Investment Levels 2 and 3, and is to be developed as commercial/retail site. The proposed development is consistent with the character of Investment Level 2 areas, and could be considered consistent for this particular Investment Level 3 area since the nearby Level 1 and 2 areas are substantially built out and this development appears to be a logical extension of the existing developments in this area. It is therefore concluded that the proposed development generally complies with the policies stated in the 2004 update of the Livable Delaware “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 site is in a Highway Commercial Area within the Environmentally Sensitive Developing Area. These are categorized as Growth Areas, which are designed to accommodate concentrated levels of development.

Highway Commercial Areas include concentrations of retail and service uses that are mainly located along highways. As opposed to small, traditional downtown areas that are often historic and pedestrian-friendly, Highway Commercial Areas include highway commercial corridors, shopping centers and other large commercial vicinities geared towards vehicular traffic. In addition to primary shopping destinations, this area would also be the appropriate place to locate hotels, motels, car washes, auto dealerships, lumberyards and other larger scale commercial uses not primarily targeted to the residents of immediately adjacent residential areas.

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.

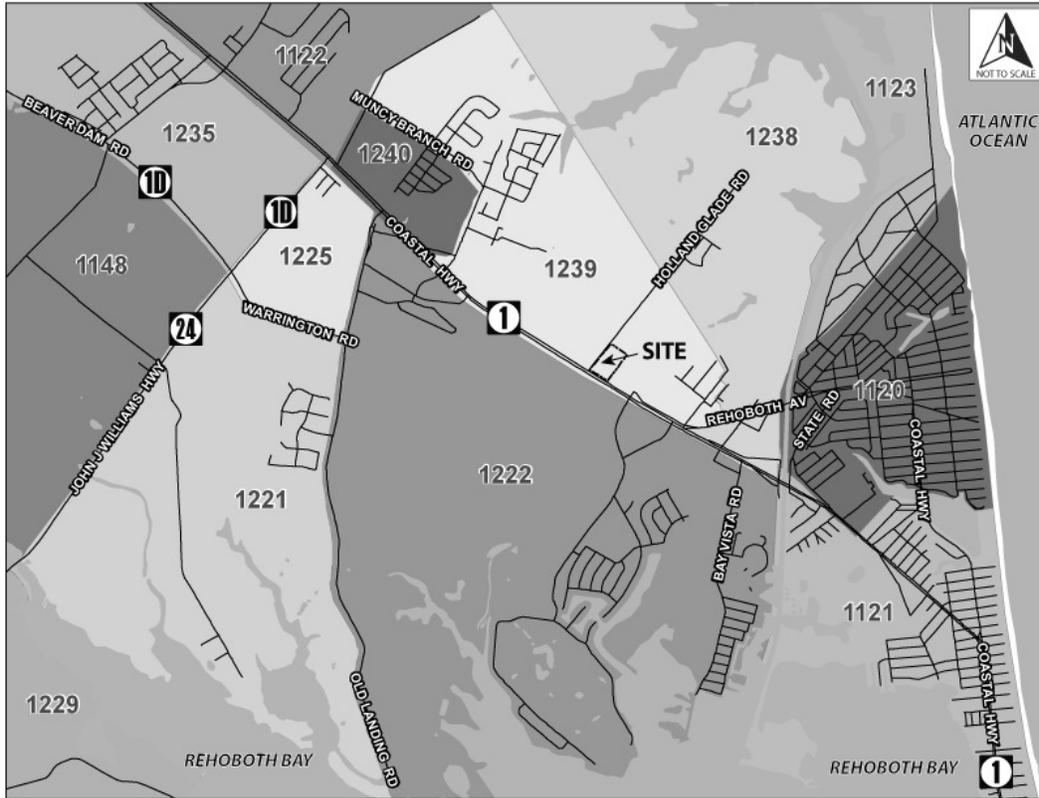
Proposed Development’s Compatibility with Comprehensive Plan:

The proposed commercial/retail land use of the proposed Corrado Commercial Property appears to comply with the *Permitted Uses* of the Growth Area designations of these parcels. As such, 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: 1239

TAZ Boundaries:



Current employment estimate for TAZ: 1,441 jobs in 2005

Future employment estimate for TAZ: 1,954 jobs in 2030

Current population estimate for TAZ: 598 people in 2005

Future population estimate for TAZ: 752 people in 2030

Current household estimate for TAZ: 289 houses in 2005

Future household estimate for TAZ: 367 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

Relevant Projects in the DelDOT Capital Transportation Program (FY 2010 – FY 2015)

DelDOT currently has three relevant projects in the study area. The SR 1, Rehoboth Canal to North of Five Points, Pedestrian Improvements project (State Contract No. 26-125-01), recommended by the SR 1 Pedestrian Study, will provide sidewalks along Delaware Route 1 to enhance pedestrian safety in the beach area. The project will also provide new pedestrian

crossings of Delaware Route 1 at numerous locations. In the immediate vicinity of the Corrado Commercial Property, the SR 1 Pedestrian Improvements project includes sidewalk along the northbound Delaware Route 1 site frontage (connecting to existing sidewalks), a crosswalk across Holland Glade Road, and a crosswalk with pedestrian signals across Delaware Route 1 just south of Holland Glade Road (in front of the Corrado Commercial property). Sidewalks and ADA compliant curb ramps are planned through a stretch of Delaware Route 1 near the proposed development. New crosswalks and channelization islands are planned at the intersections of Delaware Route 1 & Shuttle Road (Sussex Road 273D) and Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance. Pending funding availability, construction of this DelDOT project will not begin until at least July 2013.

The second project is Destination Station (State Contract No. T201012501), which will result in improvements on the site of Delaware Transit Corporation's Rehoboth Park & Ride located on Shuttle Road just west of Delaware Route 1. Destination Station is planned as a visitor and educational center for the beach resorts. This first phase of this project prepared the site for the future construction of the visitor center. The improvements consisted of constructing new site entrances, reconfiguring parking areas and adding sidewalks along the property frontage. The site-preparation phase of the project was completed in the spring of 2011. The schedule for the construction of the visitor center itself is unknown at this time.

The third project is the Beach Area Park and Ride project (State Contract No. 26-125-02). This is a study of potential park and ride lot locations in the general Rehoboth Beach-Lewes-Dewey Beach area. The purpose of the study is to determine the need for, and potential locations of, a new park and ride facility or several satellite facilities. The study includes evaluating ways to further improve and enhance the existing Rehoboth Park and Ride facility. Recommendations of this study would serve to improve pedestrian and bicycle safety and transit services in the beach area. No specific projects have yet been identified, and the schedule is unknown at this time.

Additionally, regarding DelDOT's Hazard Elimination Program (HEP) (formerly Highway Safety Improvement Program or HSIP), the intersection of Delaware Route 1 and Shuttle Road is within Site F of the 2009 HEP. The HEP committee notes considerable peak hour queuing at this intersection. The committee recommends a number of signing and pavement marking improvements at the unsignalized intersections and driveways along Shuttle Road west of Delaware Route 1, but does not recommend specific improvements for the intersection of Delaware Route 1 and Shuttle Road. They note that the signalized intersection will be improved as part of DelDOT's SR 1 Pedestrian Improvements project.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Eighth Edition, published by the Institute of Transportation Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 64,250 square-foot discount superstore (ITE Land Use Code 813)
- 10,500 square-foot strip shopping center (ITE Land Use Code 820)
- 11,450 square feet of high-turnover (sit-down) restaurant space (ITE Land Use Code 932)

Table 2. Corrado Commercial Property Peak Hour Trip Generation

Land Use	PM Peak Hour			Saturday Peak Hour		
	In	Out	Total	In	Out	Total
64,250 square-foot discount superstore	145	151	296	110	111	221
Pass-By Trips	41	42	83	31	31	62
Net External Trips	104	109	213	79	80	159
10,500 square-foot strip shopping center	69	72	141	103	95	198
Pass-By Trips	52	54	106	39	36	75
Net External Trips	17	18	35	64	59	123
11,450 square feet of high-turnover (sit-down) restaurant space	76	52	128	85	76	161
Pass-By Trips	33	22	55	37	33	70
Net External Trips	43	30	73	48	43	91
TOTAL TRIPS	164	157	321	191	182	373

Table 3. Corrado Commercial Property Daily Trip Generation

Land Use	Weekday ADT			Saturday ADT		
	In	Out	Total	In	Out	Total
64,250 square-foot discount superstore	1138	1138	2276	1191	1191	2382
10,500 square-foot strip shopping center	785	785	1570	1117	1117	2234
11,450 square feet of high-turnover (sit-down) restaurant space	728	728	1456	907	907	1814
TOTAL TRIPS	2651	2651	5302	3215	3215	6430

Overview of TIS

Intersections examined:

- 1) Holland Glade Road & Site Entrance / Tanger Outlets Seaside Entrance
- 2) Holland Glade Road & Site Truck Entrance
- 3) Delaware Route 1 & Site Entrance (rights in only)
- 4) Holland Glade Road & Hebron Road (Sussex Road 273)
- 5) Delaware Route 1 & Holland Glade Road
- 6) Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance
- 7) Delaware Route 1 & Shuttle Road

Conditions examined:

- 1) 2010 existing conditions (Case 1)
- 2) 2016 without Corrado Commercial Property (Case 2)
- 3) 2016 with Corrado Commercial Property, without DelDOT's SR 1 Pedestrian Improvements Project (Case 3A)
- 4) 2016 with Corrado Commercial Property, with DelDOT's SR 1 Pedestrian Improvements Project and signalized partial access at Delaware Route 1 & Holland Glade Road (Case 3B)

Note: Case 3B includes DelDOT's SR 1 Pedestrian Improvements Project, which impacts signal timings at the intersections along Delaware Route 1. Case 3B also analyzes the intersection of Delaware Route 1 & Holland Glade Road as a signalized, partial access intersection (rights in, rights out and lefts in, but no lefts out from Holland Glade Road), which affects volumes at all other intersections in the study area.

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

Committed developments considered:

- 1) Canal Point (294 single-family detached houses (212 unbuilt/unoccupied), 265 townhouses (165 unbuilt/unoccupied), and a 15,000 square-foot senior center)
- 2) Canal Corkran (127 single-family detached houses (74 unbuilt/unoccupied) and 97 townhouses (all built and occupied))

Note: Information for Canal Point was obtained from Sussex County Planning & Zoning and from a Record Plan provided by Davis, Bowen & Friedel, Inc. (updated June 2010). Information for Canal Corkran was obtained from Sussex County Planning & Zoning.

Intersection Descriptions

- 1) **Holland Glade Road & Site Entrance / Tanger Outlets Seaside Entrance**
Type of Control: existing two-way stop-controlled (T-intersection); proposed two-way stop-controlled (four-leg intersection)
Eastbound approach: (Holland Glade Road) existing one shared through/left-turn lane; proposed one shared through/left-turn lane and one right-turn lane
Westbound approach: (Holland Glade Road) existing one shared through/right-turn lane; proposed one shared left/through/right-turn lane
Northbound approach: (Site Entrance) proposed one shared left/through/right-turn lane, stop controlled
Southbound approach: (Tanger Outlets Seaside Entrance) existing one shared left/right-turn lane, stop controlled; proposed one shared left/through/right-turn lane, stop controlled

- 2) **Holland Glade Road & Site Truck Entrance**
Type of Control: proposed two-way stop-controlled intersection
Eastbound approach: (Holland Glade Road) existing one through lane; proposed one shared through/right-turn lane
Westbound approach: (Holland Glade Road) existing one through lane, proposed one shared through/left-turn lane
Northbound approach: (Site Truck Entrance) proposed one shared left/right-turn lane, stop controlled

- 3) **Delaware Route 1 & Site Entrance**
Type of Control: proposed two-way stop-controlled (rights-in-only T-intersection)
Northbound approach: (Delaware Route 1) three through lanes and one bus/bike/right-turn lane
Southbound approach: (Delaware Route 1) three through lanes and one bus/bike/right-turn lane, separated from northbound lanes by grass median
Note: This site entrance is proposed as a one-way street heading away from Delaware Route 1. This intersection would consist only of northbound through and right-turning traffic, and no HCS analysis is conducted for this type of intersection.

- 4) **Holland Glade Road & Hebron Road**
Type of Control: two-way stop-controlled (T-intersection)
Eastbound approach: (Holland Glade Road) one through lane and one right-turn lane
Westbound approach: (Holland Glade Road) one shared through/left-turn lane
Northbound approach: (Hebron Road) one shared left/right-turn lane, stop controlled

- 5) **Delaware Route 1 & Holland Glade Road**
Type of Control: two-way stop-controlled (T-intersection)
Westbound approach: (Holland Glade Road) one right-turn-only lane, stop controlled
Northbound approach: (Delaware Route 1) three through lanes and one bus/bike/right-turn lane
Southbound approach: (Delaware Route 1) three through lanes and one bus/bike/right-turn lane, separated from northbound lanes by grass median
- 6) **Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance**
Type of Control: signalized four-leg intersection
Eastbound approach: (Sea Air Avenue) one exclusive left-turn lane, one shared through/left-turn lane and one right-turn lane
Westbound approach: (Outlets Entrance) one exclusive left-turn lane, one shared through/left-turn lane and one right-turn lane
Northbound approach: (Delaware Route 1) two left-turn lanes, three through lanes and one bus/bike/right-turn lane
Southbound approach: (Delaware Route 1) two left-turn lanes, three through lanes and one bus/bike/right-turn lane
- 7) **Delaware Route 1 & Shuttle Road**
Type of Control: signalized four-leg intersection
Eastbound approach: (Shuttle Road) two exclusive left-turn lanes, one shared through/left-turn lane and one right-turn lane
Westbound approach: (Shuttle Road) two left-turn lanes, one through lane and one right-turn lane
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

Safety Evaluation

Crash Data: Crash data was obtained for the years of 2007 through 2009 for the intersections in this study. This study area has a number of crashes along Delaware Route 1 due to heavy volumes of beach traffic. Most of the crashes in the study area were minor rear-end collisions. No fatal crashes were reported in the study area during the three-year study period.

- Holland Glade Road & Tanger Outlets Seaside Entrance
 - No crashes reported
- Holland Glade Road & Hebron Road
 - No crashes reported
- Delaware Route 1 (northbound) & Holland Glade Road
 - 12 crashes were reported along northbound Delaware Route 1 at Holland Glade Road. Eight of these were rear-end collisions, which could be expected along this congested corridor where stop-and-go traffic conditions frequently exist. Only one angle crash was reported.

- Delaware Route 1 (southbound) & Holland Glade Road
 - Southbound Delaware Route 1 does not actually intersect with Holland Glade Road (the southbound lanes are separated from the northbound lanes by a grass median, and there is no median opening). However, the records show 16 crashes were reported along southbound Delaware Route 1 in the vicinity of Holland Glade Road (within 0.05 miles). 14 of these were rear-end collisions and the other 2 were sideswipes (same direction), and both types could be expected along this congested corridor where stop-and-go traffic conditions frequently exist.
- Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance
 - 26 crashes were reported in the southbound direction and 33 crashes were reported in the northbound direction. The majority of these crashes in both directions were rear-end collisions, which could be expected along this congested corridor where stop-and-go traffic conditions frequently exist.
- Delaware Route 1 & Shuttle Road
 - Crash data for this intersection was not evaluated since it is included in the HEP program and improvements are scheduled for construction under DelDOT's SR 1 Pedestrian Improvements Project (State Contract No. 26-125-01).
- Holland Glade Road between Delaware Route 1 and Hebron Road
 - No crashes reported
- Delaware Route 1 between Holland Glade Road and Shuttle Road
 - 4 crashes were reported in the southbound direction and 7 crashes were reported in the northbound direction. All of the southbound crashes and 6 of the 7 northbound crashes were rear-end collisions, which could be expected along this congested corridor where stop-and-go traffic conditions frequently exist.

Sight Distance: With generally straight and flat roadways, sight distance is adequate at most locations throughout the study area. No problematic sight distance issues have been reported or indicated by crash data, and none 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 development. DART Route 206, which runs year-round and connects Georgetown, Lewes and Rehoboth Beach, travels on Delaware Route 1 along the site frontage of the proposed development. Route 206 stops at the adjacent Tanger Outlets Seaside, which has a bus pull-off and shelter along northbound Delaware Route 1, as many as nine times each weekday. It also stops along southbound Delaware Route 1 at Tanger Outlets Bayside, which also has a bus pull-off and shelter. DTC has also run a number of seasonal transit routes near the proposed development. For 2010, these routes operated on weekdays and weekends from May 27th through September 19th. Seven of the seasonal routes traveled on Delaware Route 1 and made stops at both nearby Tanger Outlets sites, as well as the Rehoboth Park & Ride located on Shuttle Road.

Planned Transit service: McCormick Taylor contacted Ms. Lisa Collins, a Service Development Planner for the DTC, via email on August 23, 2010 to determine whether DTC has any plans to extend the existing transit system in the vicinity of the development. In her reply on

August 26, 2010, she stated that the Corrado property could be served directly if a bus stop was included in the plan. She recommended the site include a 5' x 8' concrete bus pad (along Delaware Route 1).

Existing bicycle and pedestrian facilities: According to the *Delaware Kent and Sussex Counties Bicycle Touring Map*, Holland Glade Road and Shuttle Road are designated as having above average cycling conditions with low traffic volumes (less than 2,000 ADT). Delaware Route 1 is designated as having average cycling conditions with high traffic volumes (greater than 10,000 ADT). Delaware Bicycle Route 1 runs along Delaware Route 1 in this area. On Delaware Route 1, bikes share a dedicated lane with buses and right turns. Holland Glade Road has dedicated bike lanes in both directions along the site frontage. There are no existing sidewalks along the site frontage, although there is a sidewalk along northbound Delaware Route 1 from Shuttle Road to the southern edge of the site frontage, and along the Tanger Outlets (Seaside and Bayside) frontages along Delaware Route 1.

Planned bicycle and pedestrian facilities: DelDOT's Bicycle and Pedestrian Facilities Team indicated, in an email from Anthony Aglio dated September 10, 2010, that the following bicycle and pedestrian facilities should be required. If the development does occur, the following requests should be incorporated into the project to facilitate bicycle and pedestrian transportation:

- a. Existing bike lanes on Holland Glade Road will need to be maintained through all turn lanes with proper warning signs.
- b. Sidewalks should be connected to existing sidewalks along Delaware Route 1.
- c. Sidewalks or Multi-use paths should be constructed along Holland Glade Road and extended to the Church property.
- d. Bicycle Parking should also be included with this development.

Subsequent to Mr. Aglio's September 10, 2010 email, we had several conversations with him via telephone regarding bicycle and pedestrian facilities. Through those discussions, the proposed bicycle and pedestrian recommendations were revised as appropriate.

As part of DelDOT's SR 1 Pedestrian Improvements Project (State Contract No. 26-125-01), a pedestrian signal and crosswalk are planned to be installed on Delaware Route 1 just south of Holland Glade Road, near the northern edge of the site frontage. Sidewalks and ADA compliant curb ramps are also planned along a stretch of Delaware Route 1 including the site frontage. Crosswalks (with ADA compliant curb ramps) are also planned across Delaware Route 1 and the side streets at the intersections of Delaware Route 1 & Shuttle Road and Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance.

General HCS Analysis Comments

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

- 1) McCormick Taylor accounted for HCS parameters such as peak hour factors, heavy vehicle percentages, lane utilization factors, and base saturation flow rates in accordance with Section 2.9.11.6 of DelDOT's *Standards and Regulations for Subdivision Streets and State Highway Access*.
- 2) For analyses of signalized intersections, McCormick Taylor used a base saturation flow rate of 1,900 pcphgpl per DelDOT's direction.
- 3) McCormick Taylor input existing Right-Turn-on-Red (RTOR) volumes for existing conditions analyses. Due to increased volumes and fewer available gaps, there would likely be fewer vehicles able to make right turns on red, so McCormick Taylor conservatively input no RTOR volumes for future conditions analyses.
- 4) For Case 3B with DelDOT's SR 1 Pedestrian Improvements Project, McCormick Taylor assumed all pedestrian pushbuttons at the Delaware Route 1 intersections would be pushed every cycle, making the pedestrian phases go to their maximum time. Pedestrian phase split times of 40 seconds were used the one-stage crossings of Delaware Route 1 at Sea Air Avenue and Shuttle Road, and shorter pedestrian phase split times were used for the two-stage crossing of Delaware Route 1 at Holland Glade Road (with pedestrian refuge in median). For Case 3B, the appropriate cycle lengths (as determined through analyses and discussion with DelDOT's Traffic Section) would be 180 seconds for the PM peak hour and 240 seconds for the summer Saturday peak hour.
- 5) Intersection lane configurations and widths were measured in the field. Existing signal timings were provided by DelDOT's Transportation Management Center (TMC) and were also measured by McCormick Taylor during the field view.

Table 4. Peak Hour Levels of Service (LOS)

Unsignalized Intersection ¹ Two-Way Stop Control (T-intersection)	LOS	
	Weekday PM	Saturday Mid-day
Holland Glade Road & Site Entrance / Tanger Outlets Seaside Entrance		
2010 Existing (Case 1)		
Eastbound Holland Glade Road – Left	A (7.4)	A (7.6)
Southbound Tanger Outlets Entrance	B (10.4)	B (11.7)
2016 without Corrado Commercial Property (Case 2)		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Southbound Tanger Outlets Entrance	B (11.6)	B (13.1)
2016 with Corrado Commercial Property (Case 3A) ²		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (7.6)	A (7.6)
Northbound Site Entrance	D (27.0)	E (42.9) ³
Southbound Tanger Outlets Entrance	C (17.4)	C (22.4)
2016 with Corrado Commercial Property (Case 3A) <i>With Improvement Option 1</i> ⁴		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (7.6)	A (7.6)
Northbound Site Entrance	C (24.6)	E (37.5) ⁵
Southbound Tanger Outlets Entrance	C (17.3)	C (22.2)
2016 with Corrado Commercial Property (Case 3A) <i>With Improvement Option 2</i> ⁶		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (7.6)	A (7.6)
Northbound Site Entrance	C (23.6)	E (35.5) ⁷
Southbound Tanger Outlets Entrance	C (17.3)	C (22.2)

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 The base configuration assumes one shared left/through/right-turn lane on each of the four approaches.

³ The 95th percentile queue length for the northbound site driveway approach during the Case 3A Saturday peak hour is approximately 7 vehicles.

⁴ Improvement Option 1 consists of the addition of a separate right-turn lane on the eastbound Holland Glade Road approach.

⁵ The 95th percentile queue length for the northbound site driveway approach during the Case 3A Saturday peak hour (with Improvement Option 1) is approximately 6 vehicles.

⁶ Improvement Option 2 includes Improvement Option 1 and adds a separate right-turn lane on the northbound site driveway approach.

⁷ The 95th percentile queue length for the northbound site driveway left-turn lane during the Case 3A Saturday peak hour (with Improvement Option 2) is approximately 6 vehicles.

Table 4 (continued). Peak Hour Levels of Service (LOS)

Unsignalized Intersection ⁸ Two-Way Stop Control (T-intersection)	LOS	
	Weekday PM	Saturday Mid-day
Holland Glade Road & Site Entrance / Tanger Outlets Seaside Entrance		
2016 with Corrado Commercial Property (Case 3A) <i>With Improvement Option 3</i> ⁹		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (7.6)	A (7.6)
Northbound Site Entrance	C (17.2)	C (22.4) ¹⁰
Southbound Tanger Outlets Entrance	C (17.3)	C (22.2)
2016 with Corrado Commercial Property (Case 3B) ¹¹		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (8.0)	A (7.9)
Northbound Site Entrance	D (29.4)	E (46.1) ¹²
Southbound Tanger Outlets Entrance	C (18.0)	C (23.0)
2016 with Corrado Commercial Property (Case 3B) <i>With Improvement Option 1</i> ¹³		
Eastbound Holland Glade Road – Left	A (7.6)	A (7.8)
Westbound Holland Glade Road – Left	A (8.0)	A (7.9)
Northbound Site Entrance	C (21.7)	D (30.3) ¹⁴
Southbound Tanger Outlets Entrance	C (17.7)	C (22.1)

⁸ 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.

⁹ Improvement Option 3 includes Improvement Option 1 and adds a separate left-turn lane on the northbound site driveway approach.

¹⁰ The 95th percentile queue length for the northbound site driveway left-turn lane during the Case 3A Saturday peak hour (with Improvement Option 3) is approximately 3 vehicles.

¹¹ The base configuration assumes one shared left/through/right-turn lane on each of the four approaches.

¹² The 95th percentile queue length for the northbound site driveway approach during the Case 3B Saturday peak hour is approximately 7 vehicles.

¹³ Improvement Option 1 consists of the addition of a separate right-turn lane on the eastbound Holland Glade Road approach.

¹⁴ The 95th percentile queue length for the northbound site driveway approach during the Case 3B Saturday peak hour (with Improvement Option 1) is approximately 5 vehicles.

Table 5. Peak Hour Levels of Service (LOS)

Unsignalized Intersection ¹⁵ Two-Way Stop Control (T-intersection)	LOS	
Holland Glade Road & Site Truck Entrance	Weekday PM	Saturday Mid-day
2016 with Corrado Commercial Property (Case 3A)		
Westbound Holland Glade Road – Left	A (9.1)	A (9.1)
Northbound Site Truck Entrance	B (13.1)	B (13.5)
2016 with Corrado Commercial Property (Case 3B)		
Westbound Holland Glade Road – Left	A (9.2)	A (9.1)
Northbound Site Truck Entrance	B (13.1)	B (13.2)

¹⁵ 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.

Table 6. Peak Hour Levels of Service (LOS)

Unsignalized Intersection ¹⁶ Two-Way Stop Control (T-intersection)	LOS	
Holland Glade Road & Hebron Road	Weekday PM	Saturday Mid-day
2010 Existing (Case 1)		
Westbound Holland Glade Road – Left	A (7.4)	A (7.5)
Northbound Hebron Road	A (9.4)	B (10.1)
2016 without Corrado Commercial Property (Case 2)		
Westbound Holland Glade Road – Left	A (7.6)	A (7.6)
Northbound Hebron Road	B (10.1)	B (10.8)
2016 with Corrado Commercial Property (Case 3A)		
Westbound Holland Glade Road – Left	A (7.6)	A (7.7)
Northbound Hebron Road	B (10.2)	B (10.9)
2016 with Corrado Commercial Property (Case 3B)		
Westbound Holland Glade Road – Left	A (7.7)	A (7.8)
Northbound Hebron Road	B (10.2)	B (10.9)

¹⁶ 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.

Table 7. Peak Hour Levels of Service (LOS)

Unsignalized Intersection¹⁷ Two-Way Stop Control (T-intersection)¹⁸	LOS	
Delaware Route 1 & Holland Glade Road	Weekday PM	Saturday Mid-day
2010 Existing (Case 1)		
Westbound Holland Glade Road – Right	B (10.6)	B (11.1)
2016 without Corrado Commercial Property (Case 2)		
Westbound Holland Glade Road – Right	B (12.2)	B (12.8)
2016 with Corrado Commercial Property (Case 3A)		
Westbound Holland Glade Road – Right	C (18.8)	C (21.1) ¹⁹

Signalized Intersection¹⁷	LOS	
Delaware Route 1 & Holland Glade Road	Weekday PM	Saturday Mid-day
2016 with Corrado Commercial Property (Case 3B) ²⁰	C (23.1)	D (44.5) ²¹

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 This intersection is unsignalized with three through lanes along northbound Delaware Route 1. This configuration can't be replicated in HCS, which has a limit of two through lanes on any approach of an unsignalized intersection. As such, we analyzed this intersection with two through lanes on the northbound approach and with through traffic volume reduced by one-third. We also adjusted volume inputs pertaining to the upstream signal data accordingly.

¹⁹ The 95th percentile queue length for the westbound Holland Glade Road approach during the Case 3A Saturday peak hour is approximately 4 vehicles.

²⁰ In Case 3B, this intersection was analyzed as a partial-access signal as an option to alleviate LOS and queuing issues at the adjacent signals along Delaware Route 1 by redistributing turning movement volumes. The modified configuration would allow rights in, rights out, and lefts in to Holland Glade Road by adding two left-turn lanes on the southbound approach of Delaware Route 1, along with a two-stage pedestrian crossing of Delaware Route 1 just south of Holland Glade Road. Lefts out from Holland Glade Road would not be allowed. A partial-access intersection at this location would significantly reduce southbound u-turn volumes at the Shuttle Road intersection, and result in generally minor volume changes at all other intersections in the study area.

²¹ The 95th percentile queue lengths for the Case 3B Saturday peak hour are approximately 19 vehicles for the southbound Delaware Route 1 left-turn lanes and approximately 43 vehicles for the westbound Holland Glade Road right-turn lane.

Table 8. Peak Hour Levels of Service (LOS)

Signalized Intersection ²²	LOS	
	Weekday PM	Saturday Mid-day
Delaware Route 1 & Sea Air Avenue / Tanger Outlets Seaside Entrance		
2010 Existing (Case 1)	C (25.3)	C (34.8)
2016 without Corrado Commercial Property (Case 2)	C (27.5)	D (50.7)
2016 with Corrado Commercial Property (Case 3A)	C (33.4)	E (65.3) ²³
2016 with Corrado Commercial Property (Case 3A) <i>With Improvement Option 1</i> ²⁴	C (31.6)	D (53.6) ²⁵
2016 with Corrado Commercial Property (Case 3B)	E (69.5)	F (90.0) ²⁶
2016 with Corrado Commercial Property (Case 3B) <i>With Improvement Option 2</i> ²⁷	D (45.3)	D (54.1) ²⁸

²² 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.

²³ The 95th percentile queue lengths for the Case 3A Saturday peak hour are approximately 16 vehicles for the southbound Delaware Route 1 left-turn lanes, 122 vehicles for the southbound Delaware Route 1 through lanes, 14 vehicles for the northbound Delaware Route 1 left-turn lanes, and 91 vehicles for the northbound Delaware Route 1 through lanes.

²⁴ Improvement Option 1 consists of converting the southbound Delaware Route 1 shared bus/bike/right-turn lane into a shared through/right-turn lane (available to all through drivers, not just buses and bikes).

²⁵ The 95th percentile queue lengths for the Case 3A Saturday peak hour (with Improvement Option 1) are approximately 15 vehicles for the southbound Delaware Route 1 left-turn lanes, 78 vehicles for the southbound Delaware Route 1 through lanes, 13 vehicles for the northbound Delaware Route 1 left-turn lanes, and 105 vehicles for the northbound Delaware Route 1 through lanes.

²⁶ The 95th percentile queue lengths for the Case 3B Saturday peak hour are approximately 23 vehicles for the southbound Delaware Route 1 left-turn lanes, 181 vehicles for the southbound Delaware Route 1 through lanes, 22 vehicles for the northbound Delaware Route 1 left-turn lanes, and 133 vehicles for the northbound Delaware Route 1 through lanes.

²⁷ Improvement Option 2 consists of converting both the southbound and northbound Delaware Route 1 shared bus/bike/right-turn lanes into shared through/right-turn lanes (available to all through drivers, not just buses and bikes).

²⁸ The 95th percentile queue lengths for the Case 3B Saturday peak hour (with Improvement Option 2) are approximately 21 vehicles for the southbound Delaware Route 1 left-turn lanes, 111 vehicles for the southbound Delaware Route 1 through lanes, 19 vehicles for the northbound Delaware Route 1 left-turn lanes, and 93 vehicles for the northbound Delaware Route 1 through lanes.

Table 9. Peak Hour Levels of Service (LOS)

Signalized Intersection ²⁹	LOS	
	Weekday PM	Saturday Mid-day
Delaware Route 1 & Shuttle Road		
2010 Existing (Case 1)	C (30.4)	D (46.7)
2016 without Corrado Commercial Property (Case 2)	D (37.4)	E (78.9)
2016 with Corrado Commercial Property (Case 3A)	D (45.6)	F (85.3) ³⁰
2016 with Corrado Commercial Property (Case 3A) <i>With Improvement Option 1</i> ³¹	D (45.2)	D (54.9) ³²
2016 with Corrado Commercial Property (Case 3B)	D (53.5)	F (81.5) ³³
2016 with Corrado Commercial Property (Case 3B) <i>With Improvement Option 1</i> ³¹	D (52.4)	E (56.4) ³⁴

²⁹ 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.

³⁰ The 95th percentile queue lengths for the Case 3A Saturday peak hour are approximately 23 vehicles for the southbound Delaware Route 1 left-turn lanes, 132 vehicles for the southbound Delaware Route 1 through lanes, 13 vehicles for the northbound Delaware Route 1 left-turn lanes, 75 vehicles for the northbound Delaware Route 1 through lanes, and 21 vehicles for the eastbound Shuttle Road left-turn lanes.

³¹ Improvement Option 1 consists of converting the southbound Delaware Route 1 shared bus/bike/right-turn lane into a shared through/right-turn lane (available to all through drivers, not just buses and bikes).

³² The 95th percentile queue lengths for the Case 3A Saturday peak hour (with Improvement Option 1) are approximately 28 vehicles for the southbound Delaware Route 1 left-turn lanes, 84 vehicles for the southbound Delaware Route 1 through lanes, 15 vehicles for the northbound Delaware Route 1 left-turn lanes, 78 vehicles for the northbound Delaware Route 1 through lanes, and 24 vehicles for the eastbound Shuttle Road left-turn lanes.

³³ The 95th percentile queue lengths for the Case 3B Saturday peak hour are approximately 11 vehicles for the southbound Delaware Route 1 left-turn lanes, 170 vehicles for the southbound Delaware Route 1 through lanes, 21 vehicles for the northbound Delaware Route 1 left-turn lanes, 87 vehicles for the northbound Delaware Route 1 through lanes, and 24 vehicles for the eastbound Shuttle Road left-turn lanes.

³⁴ The 95th percentile queue lengths for the Case 3B Saturday peak hour (with Improvement Option 1) are approximately 11 vehicles for the southbound Delaware Route 1 left-turn lanes, 107 vehicles for the southbound Delaware Route 1 through lanes, 20 vehicles for the northbound Delaware Route 1 left-turn lanes, 90 vehicles for the northbound Delaware Route 1 through lanes, and 24 vehicles for the eastbound Shuttle Road left-turn lanes.