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

CAROLANN WICKS, P.E.
SECRETARY

September 9, 2009

Ms. Sarah Keifer
Director of Planning
Department of Planning Services
Kent County Administrative Complex
555 Bay Road
Dover, DE 19901

Dear Ms. Keifer:

We are sending a revised final traffic impact study (TIS) letter for the proposed **Wick Commercial Property** development. The revision is to reflect updated traffic data that we have received for the intersection of US Route 13 and Carter Road. By applying the updated traffic data to the previous analysis, level of service (LOS) improves for the intersection of US Route 13 and Carter Road. Please note that this revision does not change our previous recommendations for improvements contained in our July 28 letter.

DelDOT has completed its review of the traffic impact study (TIS) for the proposed Wick Commercial Property development (SKR 4899) in Kent County, prepared by Braun Engineering and Surveying (BE), dated October 13, 2008.

The TIS evaluates the impact of the subject development, proposed to be located on an approximately 40-acre parcel (Tax Parcel DC-00-028.00-01-25.00) in Kent County. The parcel is currently zoned AC (Agricultural Conservation), and the developer proposes to rezone the parcel to BG (General Business) to develop retail space. For purposes of this study, a 300,000 square foot shopping center was assumed as the retail space that will be developed. The Wick Commercial Property is located on the west side of US Route 13, opposite West Big Woods Road (Kent Road 2A). Three access points are proposed: one on US Route 13, directly opposite West Big Woods Road, one along Brenford Road via a proposed connector road through the property north of the subject development, and one connecting to the subdivision streets in Willowwood for local access. The TIS assumed that construction would be complete by 2011.

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

Under the level of service (LOS) requirements listed in both DelDOT's Rules and Regulations for Subdivision Streets and Kent County's Adequate Public Facilities Ordinance, the following intersections exhibit LOS deficiencies without the implementation of physical roadway and / or traffic control improvements:

DelDOT

Intersection	*Situations for which deficiencies occur*
Site Entrance / US Route 13 / West Big Woods Road	2011 AM, PM, and Saturday with proposed development
Connector Road / Brenford Road	2011 AM, PM, and Saturday with proposed development
US Route 13 / Brenford Road / Big Oak Road	2011 AM and PM without the proposed development, 2011 AM, PM, and Saturday with the proposed development
Brenford Road / Rabbit Chase Lane / Willowwood Drive	2011 AM, PM, and Saturday with or without the proposed development
Sunnyside Road / Rabbit Chase Lane / Halliwell Drive	2011 AM, PM, and Saturday with or without the proposed development
US Route 13 / Ridgewood Drive / Nursing Home entrance (2nd crossover south of West Big Woods Road)	2011 AM, PM, and Saturday with or without the proposed development
US Route 13 / Village Drive	2011 AM and PM without development, 2011 AM, PM, and Saturday with the proposed development
Brenford Road / Brenford Station Road	2011 AM, PM, and Saturday with or without the proposed development
Brenford Road / Hickory Ridge Road	2011 AM, PM, and Saturday with or without the proposed development

The intersection of US Route 13 with Ridgewood Drive, the US Route 13 / Village Drive intersection, and the Brenford Road / Brenford Station Road intersection all exhibit LOS deficiencies in 2011. Each of the minor side streets (Ridgewood Drive and the Nursing Home entrance across from it, Village Drive, and Brenford Station Road) have relatively light traffic volumes (in this case, volumes under 75 vehicles) turning onto the major streets (US Route 13 and Brenford Road) during all three peak hours. Due to heavy through volumes along the major streets, vehicles will experience significant delay in turning from the minor streets, thus resulting in poor LOS. However, the vehicles turning from the minor streets will be distributed over the course of the peak hour, resulting in minimal traffic queues for these movements. Therefore, we do not recommend any improvements be made to these intersections.

Should the County choose to approve the proposed rezoning application, the following items should be considered as likely requirements to be imposed as part of the record plan process. All applicable agreements (i.e., letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for any development of the property.

1. The developer should enter into an agreement with DelDOT to fund an equitable portion of improving Brenford Road from US Route 13 to the eastern limits of the Hickory Hollow subdivision in order to meet DelDOT's collector road standards. Collector road standards include twelve-foot travel lanes and two eight-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes at DelDOT's discretion. DelDOT should analyze the existing travel lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary. At least one other developer (Big Oak Commons) will be responsible for funding an equitable portion of these improvements. The developer should coordinate with DelDOT's Subdivision Section on the implementation and equitable cost sharing of these improvements.

2. The developer should configure the site entrance on US Route 13 as a modified English-T. At this time, the exact configuration and location of the English-T intersection have not been determined. The developer should coordinate with DelDOT's Subdivision and Traffic sections during the site plan review process to determine the specific design and location of the site entrance.

3. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 13 and the modified English-T site entrance. The agreement should include pedestrian signals, crosswalks and interconnection at DelDOT's discretion, and the developer will be required to perform peak hour and four-hour signal warrant studies.

4. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Brenford Road with the proposed Connector Road. The agreement should include pedestrian signals, crosswalks and interconnection at DelDOT's discretion. At least one other developer (Big Oak Commons) is expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the traffic signal.

5. The developer should enter into an agreement with DelDOT to fund an equitable portion of the improvements required at the intersection of US Route 13 and Brenford Road / Big Oak Road to provide the following configuration:

Approach	***Current Configuration***	***Proposed Configuration***
Eastbound Brenford Road	One shared left-turn / through / right-turn lane	One left-turn lane, one shared left-turn / through lane, one right-turn lane
Westbound Big Oak Road	One shared left-turn / through / right-turn lane	One shared left-turn / through / right-turn lane
Northbound US Route 13	One left-turn lane, two through lanes, one right-turn lane	One left-turn lane, two through lanes, one right-turn lane
Southbound US Route 13	One left-turn lane, two through lanes, one right-turn lane	One left-turn lane, two through lanes, one right-turn lane

   At least 10 other developers will be responsible for funding an equitable portion of these improvements. The developer should coordinate with DelDOT's Subdivision Section on the implementation and equitable cost sharing of these improvements.

6. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 13 and Brenford Road / Big Oak Road. The agreement should cover physical improvements to the intersection as noted in item 5, as well as the installation of CCTV equipment. At least eight other developers are expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the traffic signal.

7. The developer should enter into an agreement with DelDOT to fund an equitable portion of the improvements required at the intersection of Brenford Road / Rabbit Chase Lane / Willowwood Drive to provide the following configuration:

Approach	*Current Configuration*	*Proposed Configuration*
Eastbound Brenford Road	One shared left-turn / through / right-turn lane	One left-turn lane, one through lane, one right-turn lane
Westbound Brenford Road	One shared left-turn / through / right-turn lane	One left-turn lane, one through lane, one right-turn lane
Northbound Willowwood Drive	One shared left-turn / through / right-turn lane	One shared left-turn / through lane, one right-turn lane
Southbound Rabbit Chase Lane	One shared left-turn / through / right-turn lane	One shared left-turn / through lane, one right-turn lane

At least seven other developers will be responsible for funding an equitable portion of these improvements. The developer should coordinate with DelDOT's Subdivision Section on the implementation and equitable cost sharing of these improvements.

8. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Brenford Road / Rabbit Chase Lane / Willowwood Drive. The agreement should cover physical improvements to the intersection as noted in item 7. At least six other developers are expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the traffic signal.

9. The developer should enter into an agreement with DelDOT to fund an equitable portion of the improvements required at the intersection of Sunnyside Road / Rabbit Chase Lane / Halliwell Drive to provide the following configuration:

Approach	*Current Configuration*	*Proposed Configuration*
Eastbound Sunnyside Road	One shared through / right-turn lane	One left-turn lane, one shared through / right-turn lane
Westbound Sunnyside Road	One shared left-turn / through lane	One left-turn lane, one shared through / right-turn lane
Northbound Rabbit Chase Lane	One shared left-turn / right-turn lane	One shared left-turn / through lane, one right-turn lane
Southbound Halliwell Drive	N/A	One shared left-turn / through / right-turn lane

At least one other developer (Centreville and Graceville) will be responsible for funding an equitable portion of these improvements. The developer should coordinate with DelDOT's Subdivision Section on the implementation and equitable cost sharing of these improvements.

10. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Sunnyside Road / Rabbit Chase Lane / Halliwell Drive. The agreement should include pedestrian signals, crosswalks and interconnection at DelDOT's discretion. At least one other developer (Centreville and Graceville) is expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the traffic signal.

11. The developer should enter into a traffic signal agreement with DelDOT for the intersection of Brenford Road and Hickory Ridge Road. The agreement should include pedestrian signals, crosswalks and interconnection at DelDOT's discretion. At least five other developers are expected to enter into a traffic signal agreement for this intersection as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the traffic signal.

12. The developer should enter into an agreement with DelDOT to fund an equitable portion of the improvement required at the intersection of Brenford Road and Hickory Ridge Road. The improvement should include installing an exclusive left-turn lane on the southbound Brenford Road approach (Phase 5 of the Brenford Road roadway improvements). At least four other developers will be responsible for funding an equitable portion of the improvement. The developer should coordinate with DelDOT's Subdivision Section on the implementation and equitable cost sharing of the improvement.

13. The developer should enter into a railroad grade crossing agreement with DelDOT for Norfolk Southern Corporation's at-grade crossing number 531980C on Brenford Road adjacent to Ryan Road. The agreement should include the installation of gates at DelDOT's discretion. At least five other developers are expected to enter into a railroad grade crossing agreement as well. The developer should coordinate with DelDOT on the implementation and equitable cost sharing of the railroad crossing.

Please note that these comments and recommendations were based on an assumed land use. Presently, a formal site plan does not exist for the proposed development. Once a site plan with an exact land use is developed, further analysis may be needed to determine if the comments and recommendations are appropriate for that land use, if they need to be changed or removed, or if additional comments and recommendations are needed. With specific regard to the intersection of US Route 13, Brenford Road and Big Oak Road, the improvements contemplated in items 5 and 6 above would not be sufficient to support the development of a 300,000 square foot shopping center.

Because a formal site plan does not exist, comments related to bicycle, pedestrian, and transit improvements have not been made. Any comments relating to these improvements will be made during DelDOT's site plan review process.

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

Additional details on our review of the TIS are attached. Please contact Mr. Troy Brestel at (302) 760-2167 if you have any questions concerning this review.

Sincerely,

T. William Brockenbrough, Jr.
County Coordinator

TWB:tbm
Enclosures
cc with enclosures: David Braun, Braun Engineering
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General Information

Report date: October 13, 2008
Prepared by: Braun Engineering
Prepared for: Frederick J. Wick, Property Owner
Tax Parcels: DC-00-028.00-01-25.00
Generally consistent with DelDOT's *Rules and Regulations for Subdivision Streets*: Yes

Project Description and Background

Description: 300,000 square feet of retail space
Location: West side of US Route 13, opposite of West Big Woods Road (Kent Road 448)
Amount of land to be developed: approximately 40.00 acres
Current zoning: AC (Agricultural Conservation)
Proposed zoning: BG (General Business)
Land use approval(s) needed: Kent County Land Development approval, rezoning approval
Proposed completion date: 2011
Proposed access locations: US Route 13 and Brenford Road (Kent Road 325)

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 location of the Wick Commercial Property is located within Investment Level 2.

Description of Investment Level:
Investment Level 2

These diverse areas surround many municipalities and also seem to be the most popular portion of Delaware's developed landscape. They serve as transition areas between the Investment Level 1 areas and the state's more open, less populated areas. These areas are often characterized by a limited variety of housing types (predominately detached single-family dwellings), commercial and office uses serving primarily local residents (examples: food, drugs, video rental, etc.), and a limited range of entertainment, parks and recreation, cultural and institutional facilities.

Proposed Development's Compatibility with Livable Delaware: The Wick Commercial Property falls within Investment Level 2. As described, Investment Level 2 are typically transition areas between Investment Level 1 and Investment Level 3 areas, in which consumer commercial developments would seem appropriate; thus, this development generally adheres to the policies in the 2004 update of the Livable Delaware "Strategies for State Policies and Spending."

Comprehensive Plans

The proposed development is located within Kent County.

Kent County Comprehensive Plan: (Source: Kent County Comprehensive Plan Update, October 2008)

Development Near Cities and Towns

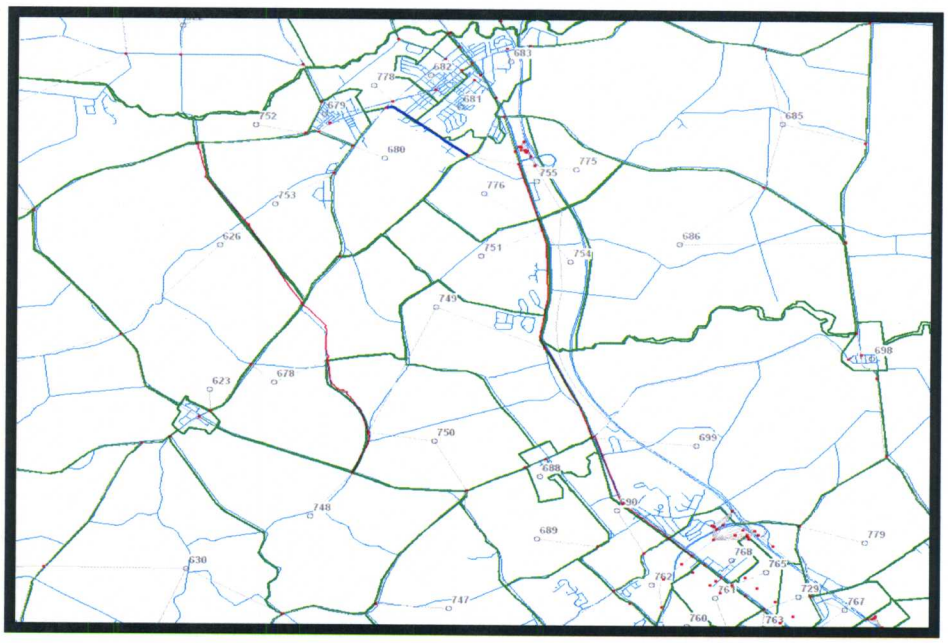
Development should be mixed use, compact, and in keeping with land use patterns and characteristics in the municipalities. Mixed-use projects should be performance based and reviewed according to certain performance criteria. Performance criteria should be based on achieving the characteristics of nearby municipalities. Appropriate housing types include single-family, two-family, townhouses, and multiplex and multifamily. Residential use may also be permitted on upper floors of structures with first floor commercial.

A wide range of commercial uses should be considered in areas proximate to municipalities including wholesale and retail sale, personal and business services, civic uses and office space. Large shopping centers over 100,000 square feet should be located in proximity to principal arterial and major collectors. Neighborhood commercial uses should be located near or within residential areas. Light and heavy industrial uses including non-manufacturing and manufacturing should be located in areas appropriate to their intensity and infrastructure requirements.

Proposed Development's Compatibility with Comprehensive Plan: As the development is commercial and exceeds 100,000 square feet and is located on US Route 13, it appears to generally adhere to the 2008 update to the Kent County Comprehensive Plan.

Regional Transportation Plan

Transportation Analysis Zones (TAZ) where development would be located: 751



Current employment estimate for TAZ: 451
Future employment estimate for TAZ: 627
Current population estimate for TAZ: 1004
Future population estimate for TAZ: 3607
Current household estimate for TAZ: 377
Future household estimate for TAZ: 1442
Relevant committed developments in the TAZ: Big Oak Commons, Big Oak Residential, Willowwood, Worthington, Centerville and Graceville, Brenford Station - Phases I and II
Would the addition of committed developments to current estimates exceed future projections: Yes
Would the addition of committed developments and the proposed development to current estimates exceed future projections: Yes

Relevant Projects in the DelDOT Capital Transportation Program (2008-2013)

Currently, there are no DelDOT projects within the study area.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Seventh Edition, published by the Institute of Transportation Engineers (ITE). Since the development is listed as 300,000 square feet of retail space, ITE Land Use Code 820 was used to determine how many new trips the Wick Commercial Property would generate.

Wick Commercial Property Trip Generation

	Morning Peak Hour			Evening Peak Hour			Saturday Mid-Day Peak Hour		
	In	Out	Total	In	Out	Total	In	Out	Total
300,000 SF of retail space	185	118	303	621	672	1293	919	849	1768
Internal Capture	0	0	0	-56	-81	-137	-46	-59	-105
Pass-by Trips	0	0	0	-158	-165	-324	-288	-261	-549
Total Primary Trips	185	118	303	407	426	832	585	529	1114

Overview of TIS

Intersections examined:

1) Site Entrance / US Route 13 / West Big Woods Road (Kent Road 2A)
2) Connector Road Access through Big Oak Commercial / Brenford Road (Kent Road 42)
3) US Route 13 / 1st Crossover north of site (between Willis Auto Mall and Brenford Road)
4) US Route 13 / Brenford Road / Big Oak Road (Kent Road 325)
5) US Route 13 / Carter Road (Kent Road 137)
6) Big Oak Road / Big Woods Road (Kent Road 448)
7) Brenford Road / Rabbit Chase Lane (Kent Road 145) / Willowwood Drive
8) Rabbit Chase Lane / Sunnyside Road (Kent Road 90) / Halliwell Drive
9) US Route 13 / 1st Crossover south of West Big Woods Road (contractor's yard)
10) US Route 13 / Ridgewood Drive / Nursing Home entrance (2nd crossover south of West Big Woods Road)
11) US Route 13 / Village Drive

12) Brenford Road / Brenford Station Road
13) Brenford Road / Hickory Ridge Road (Kent Road 149)
14) Big Oak Road / Smyrna-Leipsic Road (Kent Road 12)
15) Big Woods Road / Twin Willows Road (Kent Road 84)
16) US Route 13 / Cathleen Drive

Conditions examined:

1) Existing (2007);
2) 2011 without proposed development; and
3) 2011 with proposed development.

Peak hours evaluated: all intersections were examined during the weekday morning, weekday evening, and Saturday mid-day peak hours.

Committed developments considered:

1) Big Oak Commons (80,254 square feet of commercial space, 3 commercial outparcels)
2) Big Oak Residential (48 single-family detached houses)
3) Willowwood (498 single-family detached houses)
4) Simon's Corner Shopping Center (324,410 square foot shopping center)
5) Liborio III Shopping Center (92,000 square foot shopping center)
6) Worthington (579 single-family detached houses)
7) Centerville and Graceville (856 single-family detached houses)
8) Cambria Village (280 townhouses, 260 unbuilt)
9) Christiana Apartments (188 apartments)
10) Hickory Hollow (325 single-family detached houses)
11) Brenford Woods (111 single-family detached houses, 15 unbuilt)
12) Auburn Meadows (106 single-family detached houses, 366 townhouses)
13) Greenhill Estates (139 single-family detached houses)
14) Villages of Eastridge (234 age-restricted single-family detached houses)
15) Garrison Lake Green (313 single-family detached houses)
16) Brenford Station, Phase I (195 single-family detached houses, 84 unbuilt)
17) Brenford Station, Phase II (231 single-family detached houses)
18) Hidden Brook (325 single-family detached houses)
19) Ashland (160 single-family detached houses)
20) Wicksfield (202 single-family detached houses, 153 unbuilt)
21) Masseys Mill (60 single-family detached houses)
22) Heritage Trace (335 single-family detached houses)
23) Southern View (100 single-family detached houses)
24) Bon Ayre (404 single-family detached houses, 202 unbuilt)
25) Sunnyside Village (255 single-family detached houses, 117 unbuilt; 132 townhouses, 60 unbuilt; 235 apartments, 108 unbuilt)
26) Twin Willows (158 single-family detached houses; 69 unbuilt)
27) Spring Meadows (152 single-family detached houses, 31 unbuilt; 94 townhouses, 32 unbuilt)
28) Rite Aid (a 16,032 square foot pharmacy)

Intersection Descriptions

1) Site Entrance / US Route 13 / West Big Woods Road:

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Southbound approach: (US Route 13) one left-turn lane, two through lanes
Westbound approach: (West Big Woods Road) one shared left-turn / right-turn lane, stop-controlled

2) Connector Road Access through Big Oak Commons / Brenford Road:

Type of Control: Two-way stop-controlled intersection (T-intersection) with potential future signalization
Northbound approach: (Connector Road) one left-turn lane, one right-turn lane, stop-controlled
Eastbound approach: (Brenford Road) two through lanes, one right-turn lane
Westbound approach: (Brenford Road) one through lane, one left-turn lane

3) US Route 13 / 1st Crossover north of site:

Type of Control: Two-way stop-controlled intersection
Northbound approach: (US Route 13) one left-turn lane, two through lanes
Southbound approach: (US Route 13) one left-turn lane, two through lanes

4) US Route 13 / Brenford Road / Big Oak Road

Type of Control: Signalized intersection
Northbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Southbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Eastbound approach: (Brenford Road) one shared left-turn / through / right-turn lane
Westbound approach: (Big Oak Road) one shared left-turn / through / right-turn lane

5) US Route 13 / Carter Road

Type of Control: Signalized intersection
Northbound approach: (US Route 13) two left-turn lanes, two through lanes, one right-turn lane
Southbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Eastbound approach: (Carter Road) one left-turn lane, one through lane, one right-turn lane
Westbound approach: (Pharmacy Drive) one left-turn lane, one through lane, one right-turn lane

6) Big Oak Road / Big Woods Road

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (Big Woods Road) one shared left-turn / right-turn lane, stop-controlled
Eastbound approach: (Big Oak Road) one shared through / right-turn lane
Westbound approach: (Big Oak Road) one shared through / left-turn lane

7) Brenford Road / Rabbit Chase Lane / Willowwood Drive

Type of Control: Two-way stop-controlled intersection
Northbound approach: (Willowwood Drive) one shared left-turn / through / right-turn lane, stop-controlled
Southbound approach: (Rabbit Chase Lane) one shared left-turn / through / right-turn lane, stop-controlled
Eastbound approach: (Brenford Road) one shared left-turn / through / right-turn lane
Westbound approach: (Brenford Road) one shared left-turn / through / right-turn lane

8) Rabbit Chase Lane / Sunnyside Road / Halliwell Drive (Future Road)

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (Rabbit Chase Lane) one shared left-turn / right-turn lane, stop-controlled
Eastbound approach: (Sunnyside Road) one shared through / right-turn lane
Westbound approach: (Sunnyside Road) one shared through / left-turn lane

9) US Route 13 / 1st Crossover south of West Big Woods Road

Type of Control: Two-way stop-controlled intersection
Northbound approach: (US Route 13) two through lanes
Southbound approach: (US Route 13) one left-turn lane, two through lanes
Westbound approach: (Contractor's Yard entrance) one shared left-turn / right-turn lane, stop controlled

10) US Route 13 / Ridgewood Drive / Nursing Home entrance (2nd crossover south of West Big Woods Road)

Type of Control: Two-way stop-controlled intersection
Northbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Southbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Eastbound approach: (Nursing Home entrance) one shared left-turn / through / right-turn lane, stop-controlled
Westbound approach: (Ridgewood Drive) one shared left-turn / through / right-turn lane, stop-controlled

11) US Route 13 / Village Drive

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (US Route 13) one left-turn lane, two through lanes
Southbound approach: (US Route 13) one left-turn lane, two through lanes, one right-turn lane
Eastbound approach: (Village Drive) one shared left-turn / right-turn lane, stop-controlled

12) Brenford Road / Brenford Station Road

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (Brenford Station Road) one shared left-turn / right-turn lane, stop-controlled
Eastbound approach: (Brenford Road) one shared through / right-turn lane
Westbound approach: (Brenford Road) one shared through / left-turn lane

13) Brenford Road / Hickory Ridge Road

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (Hickory Ridge Road) one shared left-turn / right-turn lane, stop-controlled
Eastbound approach: (Brenford Road) one shared through / right-turn lane
Westbound approach: (Brenford Road) one shared through / left-turn lane

14) Big Oak Road / Smyrna-Leipsic Road

Type of Control: Two-way stop-controlled intersection
Northbound approach: (Smyrna-Leipsic Road) one shared left-turn / through / right-turn lane
Southbound approach: (Smyrna-Leipsic Road) one shared left-turn / through / right-turn lane
Eastbound approach: (Big Oak Road) one shared left-turn / through / right-turn lane, stop-controlled
Westbound approach: (Big Oak Road) one shared left-turn / through / right-turn lane, stop-controlled

15) Big Woods Road / Twin Willows Road

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (Twin Willows Road) one shared left-turn / right-turn lane, stop-controlled
Eastbound approach: (Big Woods Road) one shared through / right-turn lane
Westbound approach: (Big Woods Road) one shared through / left-turn lane

16) US Route 13 / Cathleen Drive

Type of Control: Two-way stop-controlled intersection (T-intersection)
Northbound approach: (US Route 13) two through lanes, one right-turn lane
Westbound approach: (Cathleen Drive) one right-turn lane, stop-controlled

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: US Route 13 is currently served by DART Route 301.

Planned transit service: Comments on planned transit service will be provided during DelDOT's Subdivision plan review process.

Existing bicycle and pedestrian facilities: The Kent County Bicycle Map currently lists US Route 13 as a connector bicycle route (with bikeway).

Planned bicycle and pedestrian facilities: Comments on planned bicycle and pedestrian improvements will be provided during DelDOT's Subdivision plan review process.

General HCS Analysis Comments
(see table footnotes on following pages for specific comments)

1. To account for new trips that would be shared between residential and commercial developments, DelDOT reduced volumes at the intersections along US Route 13 and Brenford Road within the study area for all three peak hours. This resulted in level of service differences between the Consultant's work and DelDOT's review.
2. The Consultant did not include analysis of the proposed recommendations contained within the TIS narrative.
3. An additional analysis for the year 2013 was completed for all intersections that required improvements. This additional analysis is two years beyond the projected build-out year, which is consistent with the requirements listed in Kent County's Adequate Public Facilities Ordinance (APFO).

Table 1
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Site Entrance / US Route 13 / West Big Woods Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Big Woods Road Westbound	F (50.5)	F (*)	F (54.6)	C (19.0)	D (29.1)	C (17.5)
US Route 13 Northbound Left-Turn	B (11.1)	B (11.5)	B (11.1)	B (10.7)	B (11.5)	B (10.9)
US Route 13 Southbound Left-Turn	B (10.4)	B (12.1)	A (9.7)	B (10.3)	B (11.9)	A (9.7)
2011 without development (Case II)						
Site Entrance Eastbound	C (17.6)	C (19.6)	C (17.0)	C (17.2)	C (19.4)	C (19.7)
Big Woods Road Westbound	F (*)	F (*)	F (*)	D (35.0)	F (*)	F (56.3)
US Route 13 Northbound Left-Turn	C (15.4)	C (16.6)	C (16.7)	B (15.0)	C (16.5)	C (16.8)
US Route 13 Southbound Left-Turn	B (12.1)	C (19.7)	B (13.1)	B (12.0)	C (18.7)	B (13.5)
2011 with development (Case III)						
Site Entrance Eastbound	C (19.9)	E (46.6)	C (19.6)	C (18.0)	D (29.3)	E (36.8)
Big Woods Road Westbound	F (*)	F (*)	F (*)	E (41.0)	F (*)	F (*)
US Route 13 Northbound Left-Turn	C (16.4)	C (22.1)	C (16.7)	C (15.9)	C (22.6)	D (31.5)
US Route 13 Southbound Left-Turn	B (12.1)	C (19.1)	B (13.1)	B (12.0)	C (18.1)	B (12.9)

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Site Entrance / US Route 13 / West Big Woods Road[2]	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 with development (Case III)	(N/A)	(N/A)	(N/A)	B (0.58)	B (0.74)	A (0.70)
2013 with development (APFO)	(N/A)	(N/A)	(N/A)	B (0.60)	B (0.77)	B (0.73)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] The proposed signal would consist of a modified English-T intersection configuration for the site entrance.

Table 2
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Connector Road / Brenford Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 with development (Case III)						
Brenford Road Westbound Left-Turn	B (11.4)	B (11.4)	C (16.0)	B (10.9)	A (9.9)	B (11.4)
Connector Road Northbound	F (117.8)	F (*)	F (*)	E (59.4)	F (*)	F (*)

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Connector Road / Brenford Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 with development (Case III)	(N/A)	(N/A)	(N/A)	C (0.45)	D (0.84)	C (0.81)
2013 with development (APFO)	(N/A)	(N/A)	(N/A)	C (0.47)	D (0.88)	C (0.84)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 4
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / Brenford Road / Big Oak Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)	B (0.54)	A (0.51)	A (0.48)	C (0.59)	C (0.59)	B (0.54)
2011 without development (Case II)	F (1.49)	F (2.32)	F (2.26)	F (1.38)	E (1.00)	D (0.85)
2011 without development (Case II) with improvements[2]	D (N/A)	D (N/A)	D (N/A)	D (0.83)	D (0.95)	D (0.80)
2011 with development (Case III)	F (1.60)	F (3.21)	F (3.43)	F (1.52)	F (1.27)	F (1.28)
2011 with development (Case III) with improvements[2]	D (N/A)	D (N/A)	D (N/A)	D (0.86)	D (0.95)	D (0.91)
2013 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	D (0.86)	D (0.99)	D (0.94)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] Improvements consist of modifying the intersection so that it has the following configuration: Eastbound: one exclusive left-turn lane, one shared left-turn / through lane, one right-turn lane. Westbound: one shared left-turn / through / right-turn lane. Northbound: one left-turn lane, two through lanes, one right-turn lane. Southbound: one left-turn lane, two through lanes, one right-turn lane.

Table 5
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / South Carter Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)[2]	N/A	N/A	N/A	B (0.53)	B (0.68)	B (0.48)
2011 without development (Case II)	B (0.87)	C (0.93)	D (2.37)	B (0.79)	C (1.00)	B (0.73)
2011 with development (Case III)	B (0.87)	D (1.03)	C (1.01)	B (0.79)	C (1.00)	B (0.73)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] Initially, traffic counts used in the TIS were performed prior to signalization of the intersection. Therefore, DelDOT utilized updated traffic counts obtained from the Liborio III TIS in this analysis to reflect the signalization of the intersection.

Table 6
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Big Oak Road / West Big Woods Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Big Oak Road Westbound Left-Turn	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
West Big Woods Road Northbound	A (9.2)	A (9.0)	A (9.6)	A (9.1)	A (9.0)	A (9.4)
2011 without development (Case II)						
Big Oak Road Westbound Left-Turn	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
West Big Woods Road Northbound	A (9.1)	A (9.1)	A (9.5)	A (9.0)	A (9.0)	A (9.4)
2011 with development (Case III)						
Big Oak Road Westbound Left-Turn	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
West Big Woods Road Northbound	A (9.0)	A (9.1)	A (9.5)	A (9.0)	A (9.0)	A (9.4)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 7
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Brenford Road / Rabbit Chase Lane / Willowwood Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Brenford Road Eastbound Left-Turn	A (7.4)	A (7.7)	A (7.6)	A (7.4)	A (7.7)	A (7.6)
Brenford Road Westbound Left-Turn	A (7.5)	A (7.4)	A (7.4)	A (7.5)	A (7.4)	A (7.4)
Willowwood Drive Northbound	A (8.9)	N/A	N/A	A (8.9)	A (8.7)	A (8.7)
Rabbit Chase Lane Southbound	A (9.4)	B (10.0)	A (9.4)	A (9.4)	B (10.0)	A (9.4)
2011 without development (Case II)						
Brenford Road Eastbound Left-Turn	A (8.7)	C (21.7)	A (7.5)	A (8.6)	C (15.3)	B (13.0)
Brenford Road Westbound Left-Turn	A (8.5)	A (8.8)	A (7.4)	A (8.3)	A (8.3)	A (8.4)
Willowwood Drive Northbound	F (*)	F (*)	N/A	F (*)	F (*)	F (*)
Rabbit Chase Lane Southbound	F (*)	F (*)	A (9.2)	F (*)	F (*)	F (*)
2011 with development (Case III)						
Brenford Road Eastbound Left-Turn	A (8.9)	D (29.3)	A (7.5)	A (8.8)	C (18.5)	C (15.6)
Brenford Road Westbound Left-Turn	A (8.7)	A (9.1)	A (7.4)	A (8.6)	A (8.5)	A (8.8)
Willowwood Drive Northbound	F (*)	F (*)	N/A	F (*)	F (*)	F (*)
Rabbit Chase Lane Southbound	F (*)	F (*)	A (9.2)	F (*)	F (*)	F (*)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 7 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Brenford Road / Rabbit Chase Lane / Willowwood Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 without development (Case II) with improvements[2]	(N/A)	(N/A)	(N/A)	C (0.62)	C (0.80)	C (0.81)
2011 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	C (0.66)	D (0.86)	D (0.90)
2013 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	C (0.67)	D (0.86)	D (0.90)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] Improvements consist of an exclusive left-turn lane and an exclusive right-turn lane on the eastbound and westbound approaches, as well as an exclusive right-turn lane on the northbound and southbound approaches.

Table 8
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Rabbit Chase Lane / Sunnyside Road / Halliwell Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Sunnyside Road Eastbound Left-Turn	A (7.2)	A (7.3)	A (7.3)	A (7.2)	A (7.3)	A (7.3)
Sunnyside Road Westbound Left-Turn	A (7.3)	A (7.3)	A (7.4)	A (7.3)	A (7.3)	A (7.4)
Rabbit Chase Lane Northbound	A (8.7)	A (8.9)	A (9.0)	A (8.7)	A (8.9)	A (9.0)
Existing Private Driveway Southbound	A (9.3)	N/A	N/A	A (9.4)	A (9.8)	A (8.5)
2011 without development (Case II)						
Sunnyside Road Eastbound Left-Turn	A (7.4)	A (8.0)	A (8.0)	A (7.4)	A (7.9)	A (7.9)
Sunnyside Road Westbound Left-Turn	A (8.1)	B (10.6)	B (10.6)	A (8.1)	B (10.1)	B (10.3)
Rabbit Chase Lane Northbound	D (26.5)	F (*)	F (*)	D (27.0)	F (*)	F (*)
Halliwell Drive Southbound	F (54.3)	F (*)	F (*)	E (40.1)	F (*)	F (*)
2011 with development (Case III)						
Sunnyside Road Eastbound Left-Turn	A (7.4)	A (8.0)	A (8.0)	A (7.4)	A (7.9)	A (7.9)
Sunnyside Road Westbound Left-Turn	A (8.2)	B (10.6)	B (11.1)	A (8.2)	B (10.4)	B (10.7)
Rabbit Chase Lane Northbound	D (32.6)	F (*)	F (*)	D (33.3)	F (*)	F (*)
Halliwell Drive Southbound	F (57.9)	F (*)	F (*)	E (42.6)	F (*)	F (*)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 8 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Rabbit Chase Lane / Sunnyside Road / Halliwell Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 without development (Case II) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.54)	C (0.62)	C (0.72)
2011 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.55)	C (0.70)	D (0.94)
2013 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.56)	C (0.71)	D (0.94)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] Improvements consist of an additional right-turn lane on the northbound approach and an additional left-turn lane on the eastbound and westbound approaches.

Table 9
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / 1st crossover south of West Big Woods Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
US Route 13 Northbound Left-Turn	B (11.0)	B (11.3)	B (10.9)	B (11.0)	B (11.3)	B (10.9)
US Route 13 Southbound Left-Turn	B (11.3)	B (12.0)	A (9.4)	B (11.3)	B (12.0)	A (9.4)
2011 without development (Case II)						
US Route 13 Northbound Left-Turn	B (14.6)	C (15.3)	C (15.4)	B (14.3)	C (15.3)	C (15.4)
US Route 13 Southbound Left-Turn	B (13.5)	C (18.7)	B (13.1)	B (13.6)	C (17.6)	B (13.1)
2011 with development (Case III)						
US Route 13 Northbound Left-Turn	B (14.8)	C (16.0)	C (16.2)	B (14.5)	C (16.0)	C (16.2)
US Route 13 Southbound Left-Turn	B (13.7)	C (19.6)	B (13.7)	B (13.8)	C (18.4)	B (13.7)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 10
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / 2nd crossover south of West Big Woods Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Nursing Home Driveway Eastbound	E (45.6)	F (78.4)	E (47.2)	C (22.1)	D (26.8)	C (23.7)
Ridgewood Drive Westbound	E (47.4)	F (53.4)	E (39.2)	C (21.6)	D (25.5)	C (19.7)
US Route 13 Northbound Left-Turn	B (11.1)	B (11.2)	B (11.0)	B (11.1)	B (11.3)	B (11.0)
US Route 13 Southbound Left-Turn	A (10.0)	B (12.1)	A (9.5)	A (10.0)	B (12.3)	A (9.6)
2011 without development (Case II)						
Nursing Home Driveway Eastbound	F (193.1)	F (808.2)	F (367.4)	E (39.2)	F (59.0)	F (54.9)
Ridgewood Drive Westbound	F (206.8)	F (560.8)	F (462.9)	E (35.2)	F (64.9)	E (49.2)
US Route 13 Northbound Left-Turn	C (15.1)	C (15.2)	C (15.7)	B (14.8)	C (15.3)	C (15.8)
US Route 13 Southbound Left-Turn	B (11.4)	C (20.0)	B (13.3)	B (11.5)	C (18.7)	B (13.4)
2011 with development (Case III)						
Nursing Home Driveway Eastbound	F (209.6)	F (997.5)	F (472.9)	E (40.2)	F (66.1)	F (62.0)
Ridgewood Drive Westbound	F (233.2)	F (719.0)	F (619.0)	E (36.3)	F (73.5)	F (58.1)
US Route 13 Northbound Left-Turn	C (15.3)	C (15.8)	C (16.6)	B (15.0)	C (16.0)	C (16.6)
US Route 13 Southbound Left-Turn	B (11.6)	C (21.1)	B (14.0)	B (11.7)	C (19.6)	B (14.1)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 11
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / Village Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Village Drive Eastbound	E (40.3)	F (*)	D (31.8)	C (20.2)	D (32.0)	C (17.9)
US Route 13 Northbound Left-Turn	B (10.5)	B (11.3)	B (10.8)	B (10.6)	B (11.5)	B (10.9)
US Route 13 Southbound Left-Turn	(N/A)	(N/A)	(N/A)	A (9.8)	B (12.0)	A (9.9)
2011 without development (Case II)						
Village Drive Eastbound	F (210.1)	F (*)	F (223.8)	E (39.2)	F (96.5)	D (33.1)
US Route 13 Northbound Left-Turn	B (14.0)	C (15.4)	C (15.6)	B (14.5)	C (15.6)	C (15.6)
US Route 13 Southbound Left-Turn	(N/A)	(N/A)	(N/A)	B (11.2)	C (18.2)	B (13.8)
2011 with development (Case III)						
Village Drive Eastbound	F (230.7)	F (*)	F (314.6)	E (40.4)	F (111.4)	E (36.7)
US Route 13 Northbound Left-Turn	B (14.1)	C (16.1)	C (16.5)	B (14.7)	C (16.3)	C (16.5)
US Route 13 Southbound Left-Turn	(N/A)	(N/A)	(N/A)	B (11.4)	C (19.0)	B (14.6)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 12
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Brenford Road / Brenford Station Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Brenford Road Westbound Left-Turn	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.4)
Brenford Station Road Northbound	A (9.5)	A (9.8)	A (9.8)	A (9.5)	A (9.7)	A (9.8)
2011 without development (Case II)						
Brenford Road Eastbound Left-Turn	A (8.7)	B (10.5)	B (10.8)	A (8.8)	A (9.8)	A (9.7)
Brenford Road Westbound Left-Turn	A (8.7)	B (10.5)	B (10.3)	A (8.9)	A (9.6)	A (9.4)
Brenford Station Road Northbound	D (33.0)	F (379.8)	F (*)	D (29.4)	F (93.0)	F (116.1)
Brenford Station Road Southbound	F (74.0)	F (*)	F (*)	F (61.5)	F (231.7)	F (228.5)
2011 with development (Case III)						
Brenford Road Eastbound Left-Turn	A (8.8)	B (11.0)	B (11.5)	A (8.8)	B (10.3)	B (10.2)
Brenford Road Westbound Left-Turn	A (8.9)	B (11.0)	B (11.0)	A (8.9)	B (10.0)	A (10.0)
Brenford Station Road Northbound	E (38.8)	F (*)	F (*)	D (33.6)	F (168.5)	F (288.5)
Brenford Station Road Southbound	F (98.2)	F (*)	F (*)	F (79.0)	F (461.1)	F (522.7)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 13
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Brenford Road / Hickory Ridge Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Brenford Road Westbound Left-Turn	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.5)	A (7.4)
Hickory Ridge Road Northbound	A (9.4)	B (10.1)	A (9.9)	A (9.4)	B (10.1)	A (9.9)
2011 without development (Case II)						
Brenford Road Westbound Left-Turn	A (10.0)	B (11.1)	B (12.0)	B (10.1)	A (9.8)	B (10.1)
Hickory Ridge Road Northbound	F (66.2)	F (*)	F (*)	F (77.4)	F (*)	F (*)
2011 with development (Case III)						
Brenford Road Westbound Left-Turn	B (10.2)	B (11.8)	B (13.3)	B (10.3)	B (10.3)	B (10.9)
Hickory Ridge Road Northbound	F (85.6)	F (*)	F (*)	F (98.3)	F (*)	F (*)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 13 (continued)
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Signalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Brenford Road / Hickory Ridge Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2011 without development (Case II) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.69)	D (0.87)	C (0.85)
2011 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.72)	D (0.93)	C (0.93)
2013 with development (Case III) with improvements[2]	(N/A)	(N/A)	(N/A)	B (0.73)	D (0.94)	C (0.94)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.
[2] Improvements consist of the addition of an exclusive left-turn lane on the southbound approach.

Table 14
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Big Oak Road / Smyrna-Leipsic Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Big Oak Road Eastbound Left-Turn	A (9.6)	B (10.0)	A (9.9)	A (9.6)	B (10.1)	A (9.8)
Big Oak Road Westbound Left-Turn	A (9.5)	B (10.2)	A (9.6)	A (9.6)	B (10.2)	A (9.6)
Smyrna-Leipsic Road Northbound	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)
Smyrna-Leipsic Road Southbound	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2011 without development (Case II)						
Big Oak Road Eastbound Left-Turn	A (9.7)	B (10.2)	A (9.8)	A (9.5)	A (9.8)	A (9.3)
Big Oak Road Westbound Left-Turn	A (9.6)	B (10.3)	A (9.7)	A (9.3)	B (10.0)	A (9.4)
Smyrna-Leipsic Road Northbound	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Smyrna-Leipsic Road Southbound	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)
2011 with development (Case III)						
Big Oak Road Eastbound Left-Turn	A (9.7)	A (9.9)	A (9.8)	A (9.5)	A (9.8)	A (9.3)
Big Oak Road Westbound Left-Turn	A (9.6)	B (10.3)	A (9.7)	A (9.3)	B (10.0)	A (9.4)
Smyrna-Leipsic Road Northbound	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.3)
Smyrna-Leipsic Road Southbound	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)	A (7.3)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 15
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
Big Woods Road / Twin Willows Road	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Twin Willows Road Eastbound	A (9.0)	A (8.5)	A (8.5)	A (8.5)	A (8.5)	A (8.5)
Big Woods Road Northbound Left-Turn	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)
2011 without development (Case II)						
Twin Willows Road Eastbound	A (9.0)	A (8.5)	A (8.6)	A (8.5)	A (8.5)	A (8.5)
Big Woods Road Northbound Left-Turn	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)
2011 with development (Case III)						
Twin Willows Road Eastbound	A (9.0)	A (8.5)	A (8.6)	A (8.5)	A (8.5)	A (8.5)
Big Woods Road Northbound Left-Turn	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)	A (7.2)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 16
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / Cathleen Drive	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
Cathleen Drive Westbound	B (13.1)	B (14.4)	B (11.9)	B (12.2)	B (13.2)	B (11.3)
2011 without development (Case II)						
Cathleen Drive Westbound	C (21.2)	D (27.2)	C (23.3)	C (18.1)	C (20.1)	C (17.2)
2011 with development (Case III)						
Cathleen Drive Westbound	C (22.3)	D (33.0)	D (29.6)	C (18.8)	C (23.3)	C (20.6)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.

Table 3
PEAK HOUR LEVELS OF SERVICE (LOS)
Based on Traffic Impact Study for Wick Commercial Property
Report dated October 13, 2008
Prepared by Braun Engineering & Surveying

Unsignalized Intersection[1]	**LOS per Analysis**			**LOS per DelDOT**		
US Route 13 / 1st crossover north of site	Weekday AM	Weekday PM	Saturday Mid-Day	Weekday AM	Weekday PM	Saturday Mid-Day
2007 existing (Case I)						
US Route 13 Northbound Left-Turn	B (11.4)	B (11.7)	B (11.1)	B (11.4)	B (11.7)	B (11.1)
US Route 13 Southbound Left-Turn	B (10.2)	B (12.2)	A (9.5)	B (10.2)	B (12.2)	A (9.5)
2011 without development (Case II)						
US Route 13 Northbound Left-Turn	C (15.4)	C (15.6)	C (15.4)	B (14.8)	B (13.6)	B (12.6)
US Route 13 Southbound Left-Turn	B (11.7)	C (18.7)	B (13.0)	B (11.6)	C (18.7)	B (13.0)
2011 with development (Case III)						
US Route 13 Northbound Left-Turn	C (16.5)	C (18.1)	C (19.3)	C (15.7)	C (15.6)	C (15.4)
US Route 13 Southbound Left-Turn	B (11.7)	C (18.7)	B (13.0)	B (11.6)	C (18.7)	B (13.0)

[1] For unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, those numbers are X-critical, a composite volume-to-capacity ratio.