



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

JENNIFER COHAN  
SECRETARY

May 5, 2016

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

Dear Mr. Hughes:

The enclosed Traffic Operational Analysis (TOA) review letter for the **King Property** commercial development (Tax Parcels NM-02-094.11-01-12.00-000, 15.00-000) has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TOA to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

A handwritten signature in blue ink, appearing to read "Troy Brestel".

Troy Brestel  
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Randy Duplechain, Davis, Bowen & Friedel, Inc.  
Mr. L. Aaron Chaffinch, Town of Camden  
Mr. Andrew Parker, McCormick Taylor, Inc.  
DelDOT Distribution

## DelDOT Distribution

Ms. Annie Cordo, Deputy Attorney General  
Mr. Robert McCleary, Director, Transportation Solutions (DOTS)  
Mr. Drew Boyce, Director, Planning  
Mr. Mark Luszcz, Chief Traffic Engineer, Traffic, DOTS  
Mr. Michael Simmons, Assistant Director, Project Development South, DOTS  
Mr. J. Marc Coté, Assistant Director, Development Coordination  
Mr. T. William Brockenbrough, Jr., County Coordinator, Development Coordination  
Mr. Peter Haag, Traffic Studies Manager, Traffic, DOTS  
Mr. Adam Weiser, Safety Engineer, Traffic, DOTS  
Mr. James Satterfield, Regional Group Engineer, Project Development South, DOTS  
Mr. Thomas Banez, Project Manager, Project Development South, DOTS  
Mr. Thomas Felice, Program Manager, Development Coordination  
Mr. David Dooley, Service Development Planner, Delaware Transit Corporation  
Mr. Anthony Aglio, Planning Supervisor, Statewide & Regional Planning  
Ms. Donna Robinson, Administrative Assistant, Statewide & Regional Planning  
Mr. Mark Galipo, Traffic Subdivision Coordinator, Development Coordination  
Mr. Todd Sammons, Subdivision Engineer, Development Coordination  
Ms. Wendy Polasko, Kent County Subdivision Coordinator, Development Coordination  
Mr. Joshua Schwartz, Subdivision Manager, Development Coordination  
Mr. Claudy Joinville, Project Engineer, Development Coordination



May 4, 2016

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

RE: Agreement No. 1655  
Traffic Impact Study Services  
**Task No. 1 Subtask 14A – King Property – Outparcels**

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Operational Analysis (TOA) for the King Property – Outparcels development prepared by Davis, Bowen & Friedel, Inc. (DBF), dated November 2015. This review was assigned as Task Number 1 (Subtask 14A). DBF prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual*.

Included as an appendix of the TOA, DBF submitted a Traffic Signal Justification Study (TSJS) for the intersection of US Route 13 (South DuPont Highway / Kent Road 24) and the proposed North Site Access. While DelDOT's Traffic Section reviewed the TSJS without McCormick Taylor's involvement, their findings are included in this review of the TOA.

The TOA evaluates the impacts of the King Property – Outparcels development, proposed to be located on the north side of Voshells Mill Road (Kent Road 105) and the west side of US Route 13 in Kent County, Delaware. The proposed commercial development would include a 36,170 square-foot supermarket, a 3,200 square-foot drive-in bank, a 9,000 square-foot high-turnover sit-down restaurant, and a 3,234 square-foot fast-food restaurant with drive-through. Three access points are proposed: one full access along US Route 13 toward the north end of the site, one rights-in/rights-out access along US Route 13 toward the south end of the site, and one full access along Voshells Mill Road. Construction is anticipated to be complete by 2019.

Upon evaluation of the TOA and further coordination between the developer and DelDOT, the proposed rights-in/rights-out access on US Route 13 was modified to a rights-in-only entrance.

The land is currently zoned C-2 (Highway Commercial) and C-1 (Community Commercial) within the Town of Camden, and the developer does not propose to change the zoning.

DelDOT currently has a number of relevant projects in the study area, including two associated with DelDOT's Hazard Elimination Program (HEP). Site A of the 2006 HEP is the section of US Route 13 from 0.22 mile north of Webbs Lane to 0.22 mile south of Lochmeath Way. Nearby, Site H of the 2012 HEP is the section of the Delaware Route 10 corridor that intersects US Route 13 and extends from 0.10 mile west of South Main Street to 0.02 mile west of Sandy Hill Trail. Both of these HEP reports recommended signing and striping improvements, which have since



been installed. The 2012 Site H report also recommended additional studies to examine the need for providing a third through lane on northbound and southbound US Route 13.

Following up on the recommendation of the 2012 HEP Site H report for additional studies, the HEP committee recommended an evaluation to determine the need for and appropriate limits of a third travel lane along northbound and southbound US Route 13 from SR 10A/Walnut Shade Road in the Woodside area to Puncheon Run to address the identified safety and capacity deficiencies. Such a study was completed and summarized in a report dated May 28, 2013. Crash and volume data was evaluated from the Sussex/Kent County line to Bay Road, and it was recommended that the installation of a third through lane within the median along northbound and southbound US Route 13 be included in the Capital Transportation Plan (CTP). It was recommended that the project be constructed in two phases, with the first phase from Lochmeath Way to Puncheon Run (2.95 miles), which would include the Voshells Mill Road intersection and US Route 13 along the King Property site frontage. Depending on the rate of growth and development activity along the corridor, a second phase could be constructed from SR 10A/Walnut Shade Road to Lochmeath Way (1.71 miles). The first phase is included in the FY 2015-2020 CTP as the *HEP KC, US 13 Lochmeath Way to Puncheon Run Connector Project* with Preliminary Engineering scheduled to begin in FY 2017.

In addition to the evaluation of the US Route 13 corridor described above, other initiatives have identified the need for capacity improvements in the area. In particular, in 2009 the Town of Camden approved the “Camden Bypass Concept – Option B” plan developed by DelDOT and subsequently adopted it as part of the 2013 Amendment to the 2007 Camden Comprehensive Plan. This conceptual improvement option involves the realignment of Delaware Route 10 to cross US Route 13 south of Camden-Wyoming Avenue. Presently, the proposed realignment of Delaware Route 10 would have it cross US Route 13 with a new signalized intersection at or near the location of the proposed King Property – Outparcels North Site Access on US Route 13. While the schedule for the Camden Bypass project is only tentative at this time (planned for completion in 2022), the site plan and access for the proposed King Property – Outparcels development would need to accommodate the design of the proposed Camden Bypass project.

Associated with both the Camden Bypass project and the King Property development is the need to relocate the driveway for the Positive Outcomes Charter School on the east side of US Route 13 across from the proposed King Property site. The existing school driveway is located at a US Route 13 median crossover. That driveway must be closed (or modified to restrict exiting movements), and the driveway relocated to intersect with US Route 13 as a fourth leg directly across from the proposed King Property – Outparcels North Site Access. When the Camden Bypass is built, the realigned Delaware Route 10 will become the fourth leg. At that time another modification of the school driveway will be needed.

DelDOT’s Traffic Section recently completed a statewide Crossover Study for signalized intersections throughout the state to determine whether appropriate signing and pavement markings are installed. The intersection of US Route 13 and Voshells Mill Road is identified in that study for signing and striping improvements. The improvements recommended by the Crossover Study for this intersection have not yet been implemented.



DelDOT’s Corridor Capacity Preservation Program (CCPP), which is a statewide program intended to manage and preserve the traffic capacity and safety of adopted highway corridors by various means such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, such as US Route 13, are able to efficiently carry regional traffic without significant impedance from the effects of local development. The program was established in accordance with the provisions of Title 17, Section 145 of the Delaware Code. DelDOT’s CCPP Manager has no objection to the proposed development, and stated that rights-in access can be granted. He indicated that other potential access configurations to/from the King Property development along US Route 13, such as lefts-in or full access, will be determined in part by DelDOT’s Traffic Section.

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

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

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Proposed Traffic Control</i>	<i>Situations for which deficiencies occur</i>
US Route 13 & North Site Access / Relocated Positive Outcomes Driveway	Does Not Exist	Unsignalized (Case 3) or Signalized (Case 4)	2019 PM with King Property – Outparcels (Cases 3 and 4); 2019 Saturday with King Property – Outparcels (Case 4)

As a future signalized intersection having the lane configurations proposed in the TOA, the intersection of US Route 13 and North Site Access / Relocated Positive Outcomes Driveway exhibits LOS deficiencies during future weekday PM peak hour conditions. Acceptable LOS could be achieved with additional left-turn lanes on the eastbound approach (consistent with the configuration described below in Item No. 3) and/or if a third through lane were added each way along northbound and southbound US Route 13. We do not recommend that the third through lanes be implemented directly by the developer, but they will be incorporated as part of DelDOT’s US Route 13 Widening project. In the meantime, the developer will need to coordinate with DelDOT to determine details of the signalized intersection design that would accommodate both the proposed King Property – Outparcels development and the planned Camden Bypass and US Route 13 Widening projects.

As part of the TOA, a Traffic Signal Justification Study (TSJS) was required for the intersection of US Route 13 and North Site Access / Relocated Positive Outcomes Driveway. This study was reviewed by DelDOT without McCormick Taylor’s involvement. Based on the volumes alone, McCormick Taylor and DelDOT agree that a traffic signal would be warranted, which would be needed anyway at this location when the Camden Bypass project is constructed. DelDOT’s preference would be to not install a signal at this location until the Camden Bypass project and/or the US Route 13 Widening project goes to construction, so that the design details for the signalized intersection will be consistent with the exact alignment and details of both projects, which are yet to be determined. However due in part to the access needs of the proposed King Property – Outparcels development, DelDOT will allow a full-movement signalized intersection



to be constructed at this location in advance of the Camden Bypass project and/or the US Route 13 Widening project, as long as the design accommodates both the Camden Bypass project and the US Route 13 Widening project to the extent possible at this time. While the base lane configurations evaluated for this proposed signalized intersection are shown below in Item No. 3, it is noted that the developer will need to continue to coordinate with DeIDOT regarding final lane configurations and other design details.

Should the Town of Camden choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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. Along the southbound US Route 13 site frontage, the developer should mill and provide a bituminous concrete overlay to the existing shoulder, at DeIDOT's discretion. DeIDOT should analyze the shoulder's pavement section and recommend an overlay thickness to the developer's engineer if necessary. This mill and overlay may extend beyond the site frontage as necessary to address changes in striping associated with entrance construction.
2. The developer should improve the north side of Voshells Mill Road (westbound direction) along the site frontage of the lands proposed to be developed as part of the King Property – Outparcels site to meet DeIDOT's major collector road standards. These standards include but are not limited to twelve-foot travel lanes and eight-foot shoulders. The developer should provide a bituminous concrete overlay to the existing shoulder and travel lanes, at DeIDOT's discretion. DeIDOT should analyze the existing lanes' pavement section and recommend an overlay thickness to the developer's engineer if necessary. This overlay may extend beyond the site frontage as necessary to address changes in striping associated with entrance construction.
3. The developer should construct the proposed North Site Access on US Route 13, approximately 1,300 feet north of Voshells Mill Road. The location shall be consistent with the location where the proposed Camden Bypass will intersect US Route 13.

As part of this site access intersection construction, the existing driveway for the Positive Outcomes Charter School on the east side of US Route 13, which intersects US Route 13 at a median crossover approximately 975 feet north of Voshells Mill Road, will be modified to restrict exiting movements. The main Positive Outcomes driveway will be relocated to intersect US Route 13 directly across from the proposed North Site Access. The proposed initial configuration of the new intersection is shown in the table below and in the sketch plan that follows on Page 7. Additional lanes and longer lanes will be needed in the future to accommodate the Camden Bypass and the US Route 13 Widening projects.



Approach	Current Configuration	Proposed Configuration
Northbound US Route 13	Two through lanes	One left turn lane and two through lanes
Southbound US Route 13	Two through lanes	One left-turn lane, two through lanes and one right-turn lane
Eastbound North Site Access	Approach does not exist	Two left-turn lanes, one through lane and one right-turn lane
Westbound Relocated Positive Outcomes Driveway	Approach does not exist	One left-turn lane and one shared through/right-turn lane

The developer should coordinate with DeIDOT's Subdivision Section to determine other design details for the proposed intersection and all intersecting roads, as the design must accommodate both the Camden Bypass project and DeIDOT's *HEP KC, US 13 Lochmeath Way to Puncheon Run Connector Project*, which would add a third through lane each way on US Route 13 through this intersection. Specific to the North Site Access driveway (western leg of this proposed intersection), a comparison of the interim condition that should be constructed by the developer vs. the ultimate condition that will be needed to accommodate the two aforementioned projects is provided on Page 8.

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

Approach	Left-Turn Lane(s)	Right-Turn Lane
Northbound US Route 13	260 feet *	N/A
Southbound US Route 13	235 feet *	305 feet **
Eastbound North Site Access	115 feet *	50 feet *
Westbound Relocated Positive Outcomes Driveway	90 feet *	N/A

\* initial turn lane length based on queuing analysis and coordination with DeIDOT, with 50-foot minimum; final length to be determined by DeIDOT during site plan review process

\*\* initial turn lane length based on DeIDOT's *Auxiliary Lane Worksheet*

The developer should coordinate with DeIDOT's Subdivision Section and the owner of the Positive Outcomes Charter School property to determine design details related to the required Positive Outcomes driveway relocation, including alignment of the new driveway along with any needed signing/striping/pavement marking additions or modifications and Positive Outcomes site layout/circulation modifications.



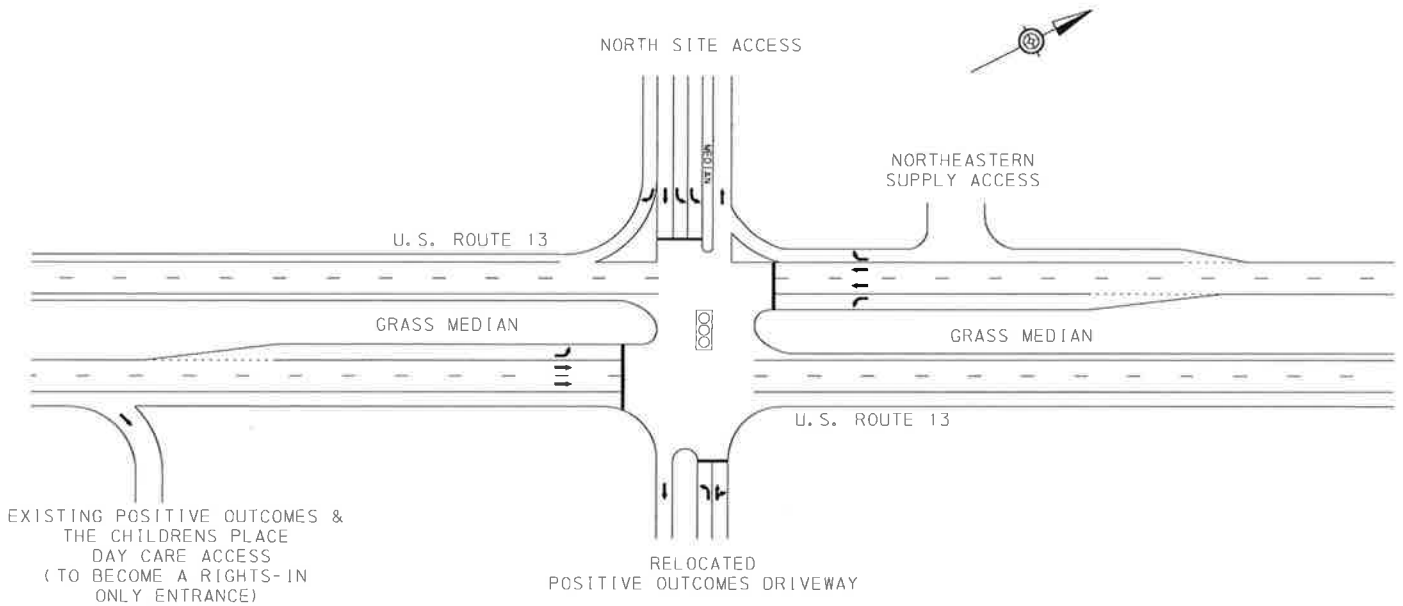
Similarly, upon construction of the proposed North Site Access, the developer should provide alternate access to the rear of the adjoining property located to the north (Northeastern Supply – a plumbing/HVAC supply store) by way of a connection to the North Site Access driveway. Whether to permit through traffic to or from the residential portion of East Street shall be at the Town of Camden’s discretion.

The following lane widths are required on the North Site Access driveway (west leg of the US Route 13 intersection) for the ultimate condition needed to accommodate the two aforementioned projects, for a total cross-section width of 93 feet. This ultimate condition is shown on the bottom of Page 8.

Direction of Road	Proposed Configuration and Lane Widths for Ultimate Condition
Eastbound North Site Access	Two 11’ left-turn lanes One 11’ through lane One 5’ bike lane One 11’ right-turn lane
Median	4’ median with 1’ offset on both sides
Westbound North Site Access	Two 11’ receiving lanes (for northbound US 13 dual lefts) One 5’ bike lane One 11’ separate receiving lane (for southbound US 13 right turns)

4. The developer should enter into a traffic signal agreement with DelDOT and design and construct a traffic signal for the intersection of US Route 13 and the proposed North Site Access / Relocated Positive Outcomes Driveway. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT’s discretion. The developer should coordinate with DelDOT on the implementation of the traffic signal. The agreement should provide for installation and activation of the signal at DelDOT’s discretion but in any event before the proposed supermarket opens.





NOTES:

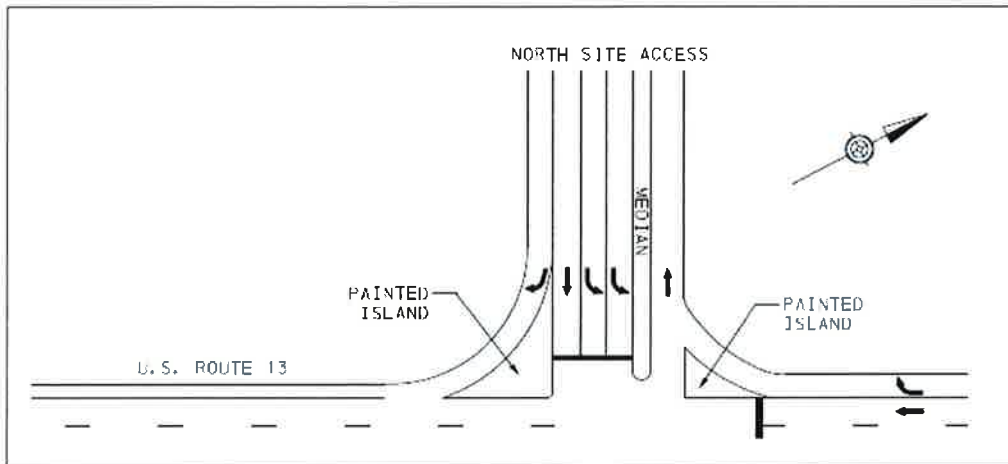
- 1.) NOT TO BE USED FOR DESIGN. ALL DESIGN ASPECTS MUST BE COORDINATED WITH DELDOT.
- 2.) REQUIRED BICYCLE AND PEDESTRIAN FACILITIES ARE NOT SHOWN DUE TO SCALE.
- 2.) WHILE NOT SHOWN, SIGNALIZED CROSSWALKS WILL BE REQUIRED ON THE NORTH SITE ACCESS, THE RELOCATED POSITIVE OUTCOMES DRIVEWAY AND EITHER THE NORTH OR SOUTH LEG OF US ROUTE 13.

**PROPOSED INTERSECTION:  
US ROUTE 13 AND NORTH SITE ACCESS /RELOCATED POSITIVE OUTCOMES DRIVEWAY  
SKETCH PLAN & INITIAL LANE CONFIGURATIONS**

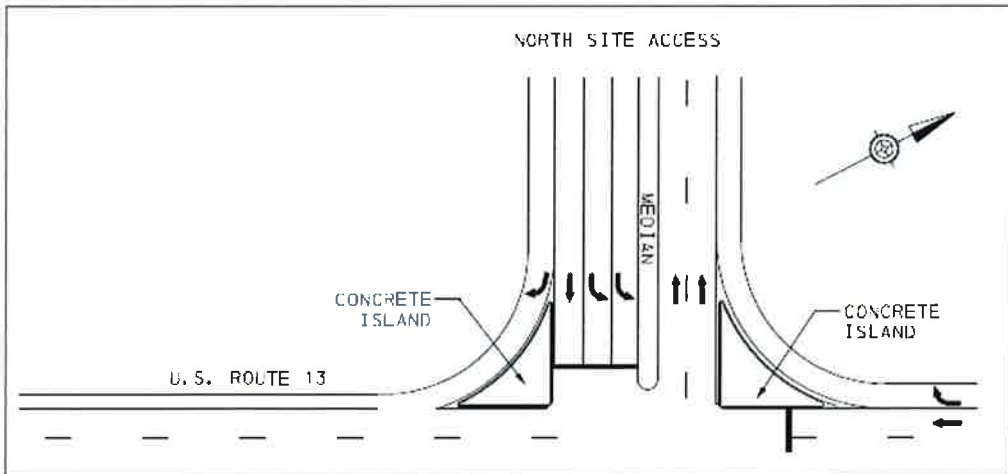
**NOT TO SCALE**

**Comparison of Interim Condition vs. Ultimate Condition for North Site Access Driveway  
(as referenced in Item No. 3 above)**

**Interim Condition (To Be Constructed By Developer)**



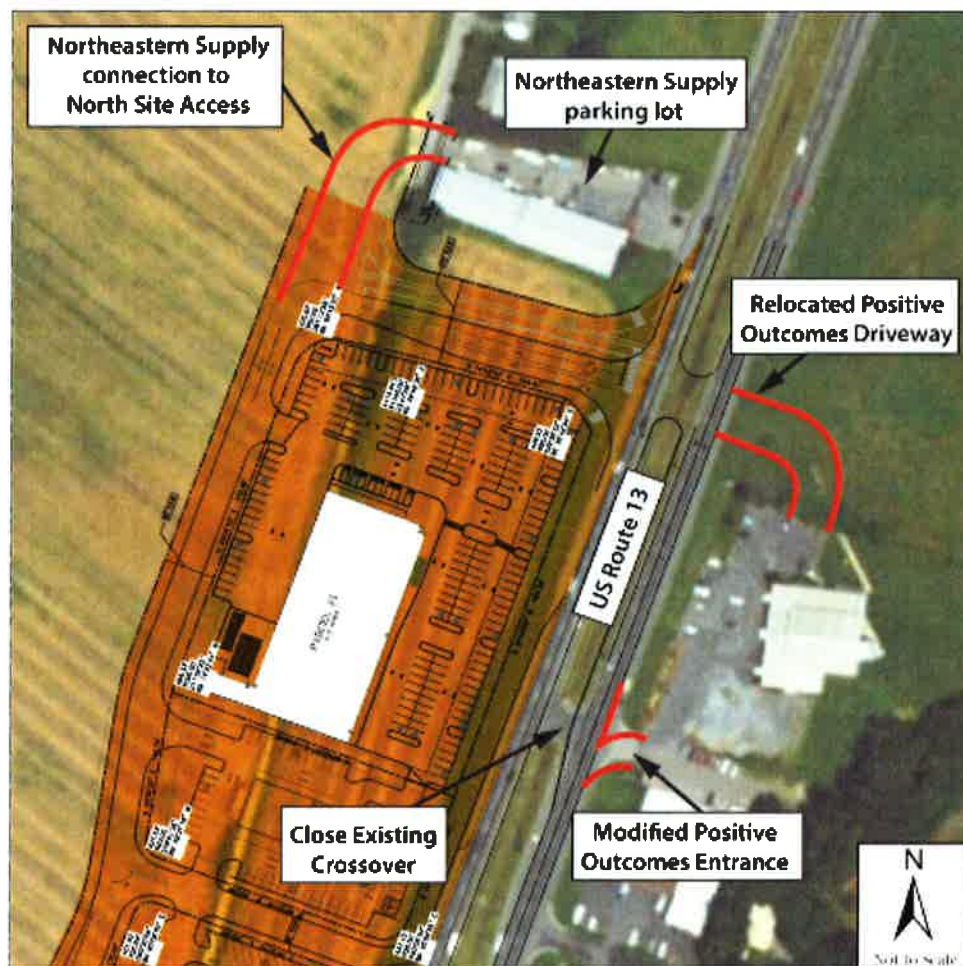
**Ultimate Condition (To Accommodate Camden Bypass & US Route 13 Widening Projects)**



Note: Not to be used for design. All design aspects must be coordinated with DeIDOT. Required bicycle and pedestrian facilities are not shown.

- The developer should close the existing US Route 13 median crossover and the associated left-turn/u-turn lanes located approximately 975 feet north of Voshells Mill Road. The paved area for this crossover and the turn lanes should be removed and replaced with grass median, consistent with the adjacent median. The existing driveway that serves the Positive Outcomes Charter School on the east side of US Route 13 at this crossover should be restricted to right turns in, with no exit, as described above in Item No. 3.

For clarification, the figure provided immediately below illustrates a concept plan of many of the elements described in Item Nos. 3 and 5, including the North Site Access location, the Relocated Positive Outcomes Driveway, the Northeastern Supply alternate access, the closure of the existing median crossover, and the modified existing Positive Outcomes Driveway (rights-in only).





6. The developer should construct the rights-in-only South Site Access on US Route 13, approximately 675 feet north of Voshells Mill Road. The design of this entrance should include a separate right-turn lane on southbound US Route 13, with an initial recommended turn-lane length of 305 feet (excluding taper). The developer should coordinate with DeLDOT's Subdivision Section to determine the final turn-lane length during the site plan review process.

To further reinforce that this access point is a one-way entrance only (not an exit from the site onto US Route 13), Do Not Enter signs (MUTCD R5-1) and arrow pavement markings shall be installed and oriented to face potential site exiting traffic along this entrance driveway.

7. The developer should construct the proposed Site Access along Voshells Mill Road at Park Lane as a new northern leg to the existing two-way stop controlled T-intersection. The proposed configuration of the improved intersection including the new site access is shown in the table below.

<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Northbound Park Lane	One shared left/right-turn lane	One shared left/through/right-turn lane
Southbound Site Access	Approach does not exist	One shared through/left-turn lane and one right-turn lane
Eastbound Voshells Mill Road	One shared through/right-turn lane	One shared left/through/right-turn lane
Westbound Voshells Mill Road	One shared through/left-turn lane	One shared through/left-turn lane and one right-turn lane



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

Approach	Left-Turn Lane	Right-Turn Lane
Northbound Park Lane	N/A	N/A
Southbound Site Access	N/A	50 feet *
Eastbound Voshells Mill Road	N/A	N/A
Westbound Voshells Mill Road	N/A	100 feet **

\* initial turn lane length based on storage length per queuing analysis, with 50-foot minimum; final length to be determined by DelDOT during site plan review process

\*\* initial turn lane length based on DelDOT's *Auxiliary Lane Worksheet*, but upon further coordination with DelDOT the developer has agreed to install the longest right-turn lane that can be safely constructed (length to be determined)

As part of the design and construction of this site access intersection, the access to and from the Valero gas station by way of Voshells Mill Road, presently behind the convenience store, must be maintained or relocated.

8. The developer should coordinate with DelDOT regarding DelDOT's *HEP KC, US 13 Lochmeath Way to Puncheon Run Connector Project*, which will involve the installation of a third through lane along northbound and southbound US Route 13. DelDOT has determined that no additional rights-of-way are needed from the King Property for this project. However, the radii for both entrances located on US Route 13 should be designed to accommodate the future third lane widening towards the King Property.
9. Along the Site Access roadway that connects to Voshells Mill Road opposite Park Lane, the proposed entrances to Parcels 3 and 4 shown on the site plan included in the TOA should be combined into one entrance, to be located at the boundary line of the two properties.
10. An easement should be provided to connect Parcels 1 and 2 at the proposed turnaround near the front of the grocery store parking lot. The developer should coordinate with DelDOT's Subdivision Section to determine details of this easement during the site plan review process.



11. The following bicycle, pedestrian, and transit improvements should be included:
  - a. A right-turn yield to bikes sign (MUTCD R4-4) should be added at the start of the right-turn lane on southbound US Route 13 at the North Site Access, at the start of the right-turn lane on southbound US Route 13 at the South Site Access, and at the start of the right-turn lane on westbound Voshells Mill Road at the Site Access.
  - b. Adjacent to the right-turn lanes along southbound US Route 13 at the North Site Access, along southbound US Route 13 at the South Site Access, and along westbound Voshells Mill Road at the Site Access, a minimum of a five foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
  - c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the project limits.
  - d. Utility covers should be made flush with the pavement.
  - e. Bike parking should be provided near the building entrances within this development. Where the building architecture provides for an awning or other overhang, the bike parking should be covered.
  - f. A minimum 15-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along US Route 13. Within the easement along US Route 13, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed along the site frontage. The shared-use path should have a minimum of a five-foot buffer from the roadway. At the northern property boundary, the shared-use path should connect to the shoulder of US Route 13 in accordance with DelDOT's *Shared Use Path and/or Sidewalk Termination Policy* dated June 19, 2014. At the southern property boundary, the shared-use path should connect to a new five-foot sidewalk that will need to be constructed to the south, inside the existing right-of-way, to tie into the existing curb ramp at Voshells Mill Road. The developer should coordinate with DelDOT and the adjacent property owner to determine details of the design and implementation of the shared-use path transition to sidewalk at the southern property boundary and the subsequent sidewalk extension to Voshells Mill Road.
  - g. A minimum 15-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontage along Voshells Mill Road. Within the easement along Voshells Mill Road, a minimum of a ten-foot wide shared-use path that meets current AASHTO and ADA standards should be constructed along the developed portion of the site frontage including the frontage of the proposed stormwater management basin. The shared-use path should have a minimum of a five-foot buffer from the roadway. To both the east and the west of the proposed Site Access on Voshells Mill Road, the shared-use path should connect to the shoulder of Voshells Mill Road in accordance with DelDOT's *Shared Use Path and/or Sidewalk Termination Policy* dated June 19, 2014. The developer should coordinate with DelDOT's Subdivision Section to determine exact locations and details of the shared-use path connections to the shoulder.



- h. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged. A minimum of three signalized crosswalks will be required at the North Site Access.
- i. In addition to the site frontage shared-use paths described above, 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 five 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 any proposed frontage shared-use paths and to bus stop waiting pads along US Route 13 and Voshells Mill Road.
- j. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to eliminate vehicular overhang onto the sidewalk.
- k. The developer should coordinate with the Delaware Transit Corporation (DTC) regarding the addition of two ADA-compliant bus stop waiting pads; one on southbound US Route 13 along the site frontage and one on westbound Voshells Mill Road just west of the proposed Site Access. An internal sidewalk should connect the proposed bus stop waiting pad on US Route 13 to the parking lot of the proposed supermarket. The developer should coordinate with the DTC regarding the details and implementation of the transit-related improvements, particularly in relation to future improvements as part of DelDOT's *HEP KC, US 13 Lochmeath Way to Puncheon Run Connector Project* and the Camden Bypass project.

Improvements in this TOA may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at [http://www.deldot.gov/information/pubs\\_forms/manuals/de\\_mutcd/index.shtml](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 DelDOT's Traffic Section. Mr. Weiser can be reached at (302) 659-4073 or by email at [Adam.Weiser@state.de.us](mailto:Adam.Weiser@state.de.us).

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

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

Sincerely,

**McCormick Taylor, Inc.**

A handwritten signature in black ink, appearing to read "Andrew J. Parker".

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

Enclosure

*King Property – Outparcels*

*May 4, 2016*

*Page 13*

**General Information**

**Report date:** November 2015

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

**Prepared for:** Carl P. King Real Estate LLC

**Tax parcel:** NM-02-094.11-01-12.00 and 15.00

**Generally consistent with DelDOT's *Development Coordination Manual*:** Yes

**Project Description and Background**

**Description:** The proposed commercial development would include a 36,170 square-foot supermarket, a 3,200 square-foot drive-in bank, a 9,000 square-foot high-turnover sit-down restaurant, and a 3,234 square-foot fast-food restaurant with drive-through.

**Location:** The King Property – Outparcels development is proposed to be located on the north side of Voshells Mill Road (Kent Road 105) and the west side of US Route 13 (South DuPont Highway / Kent Road 24) in Kent County, Delaware. A site location map is included on Page 15.

**Amount of land to be developed:** approximately 7.0 acres for the outparcels; however the full size of the affected tax parcels totals approximately 44.7 acres

**Land use approval(s) needed:** Subdivision approval. The land is currently zoned C-2 (Highway Commercial) and C-1 (Community Commercial) within the Town of Camden, and the developer does not propose to change the zoning.

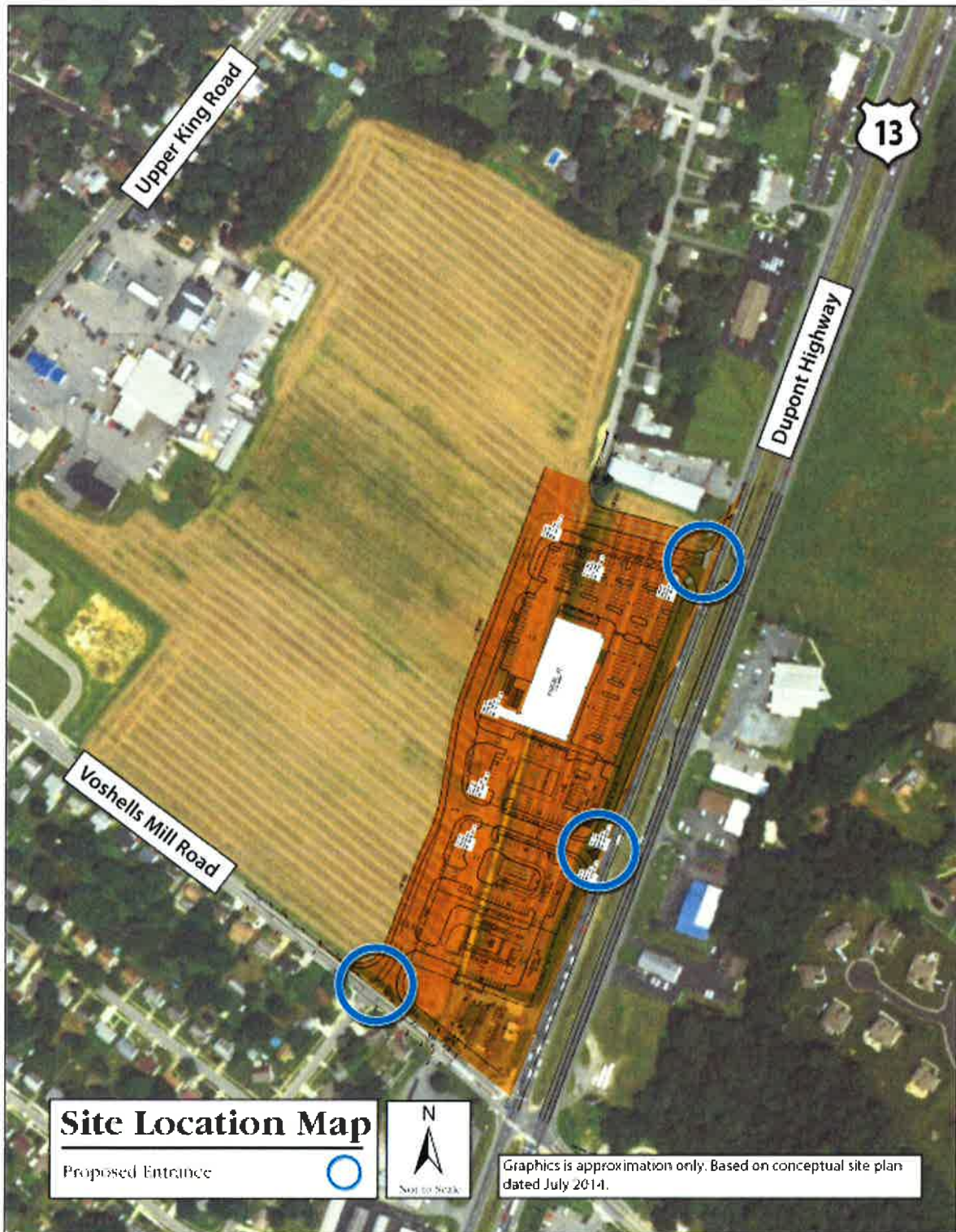
**Proposed completion date:** 2019

**Proposed access locations:** Three access points are proposed: one full access along US Route 13 toward the north end of the site, one rights-in/rights-out access along US Route 13 toward the south end of the site, and one full access along Voshells Mill Road.

**Daily Traffic Volumes (per DelDOT Traffic Summary 2014):**

- 2014 Average Annual Daily Traffic on US Route 13: 43,116 vpd
- 2014 Average Annual Daily Traffic on Voshells Mill Road: 3,459 vpd





## **Delaware Strategies for State Policies and Spending – 2010 Update**

**Location with respect to the Strategies for State Policies and Spending Map of Delaware:**  
The proposed King Property – Outparcels development is located in an Investment Level 1 area.

### *Investment Level 1*

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

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

The proposed King Property – Outparcels development is located within an Investment Level 1 area, and is to be developed as several pad sites including a supermarket, a bank, a fast-food restaurant, and a high turnover sit-down restaurant. This type of development is consistent with the character of Investment Level 1 areas. The proposed development is located within the Town of Camden along the commercial corridor of US Route 13. The *Strategies* document generally encourages efficient new growth and redevelopment in Investment Level 1 areas, and the proposed development is consistent with those goals. It is therefore concluded that the proposed development generally complies with the policies stated in the 2010 update of the "Strategies for State Policies and Spending."

### **Relevant Projects in the DelDOT Capital Transportation Program**

DelDOT currently has a number of relevant projects in the study area, including two associated with DelDOT's Hazard Elimination Program (HEP). Site A of the 2006 HEP is the section of US Route 13 from 0.22 mile north of Webbs Lane to 0.22 mile south of Lochmeath Way. Nearby, Site H of the 2012 HEP is the section of the Delaware Route 10 corridor that intersects US Route 13 and extends from 0.10 mile west of South Main Street to 0.02 mile west of Sandy Hill Trail. Both of these HEP reports recommended signing and striping improvements, which have since been installed. The 2012 Site H report also recommended additional studies to examine the need for providing a third through lane on northbound and southbound US Route 13.

Following up on the recommendation of the 2012 HEP Site H report for additional studies, the HEP committee recommended an evaluation to determine the need for and appropriate limits of a third travel lane along northbound and southbound US Route 13 from SR 10A/Walnut Shade Road in the Woodside area to Puncheon Run to address the identified safety and capacity deficiencies. Such a study was completed and summarized in a report dated May 28, 2013. Crash and volume data was evaluated from the Sussex/Kent County line to Bay Road, and it was recommended that the installation of a third through lane within the median along northbound and southbound US Route 13 be included in the Capital Transportation Plan (CTP). It was

recommended that the project be constructed in two phases, with the first phase from Lochmeath Way to Puncheon Run (2.95 miles), which would include the Voshells Mill Road intersection and US Route 13 along the King Property site frontage. Depending on the rate of growth and development activity along the corridor, a second phase could be constructed from SR 10A/Walnut Shade Road to Lochmeath Way (1.71 miles). The first phase is included in the FY 2015-2020 CTP as the *HEP KC, US 13 Lochmeath Way to Puncheon Run Connector Project* with Preliminary Engineering scheduled to begin in FY 2017.

In addition to the evaluation of the US Route 13 corridor described above, other initiatives have identified the need for capacity improvements in the area. In particular, in 2009 the Town of Camden approved the “Camden Bypass Concept – Option B” plan developed by DelDOT and subsequently adopted it as part of the 2013 Amendment to the 2007 Camden Comprehensive Plan. This conceptual improvement option involves the realignment of Delaware Route 10 to cross US Route 13 south of Camden-Wyoming Avenue. Presently, the proposed realignment of Delaware Route 10 would have it cross US Route 13 with a new signalized intersection at or near the location of the proposed King Property – Outparcels North Site Access on US Route 13. While the schedule for the Camden Bypass project is only tentative at this time (planned for completion in 2022), the site plan and access for the proposed King Property – Outparcels development would need to accommodate the design of the proposed Camden Bypass project.

Associated with both the Camden Bypass project and the King Property development is the need to relocate the driveway for the Positive Outcomes Charter School on the east side of US Route 13 across from the proposed King Property site. The existing school driveway is located at a US Route 13 median crossover. That driveway must be closed (or modified to restrict exiting movements), and the driveway relocated to intersect with US Route 13 as a fourth leg directly across from the proposed King Property – Outparcels North Site Access. When the Camden Bypass is built, the realigned Delaware Route 10 will become the fourth leg. At that time another modification of the school driveway will be needed.

DelDOT’s Traffic Section recently completed a statewide Crossover Study for signalized intersections throughout the state to determine whether appropriate signing and pavement markings are installed. The intersection of US Route 13 and Voshells Mill Road is identified in that study for signing and striping improvements. The improvements recommended by the Crossover Study for this intersection have not yet been implemented.

DelDOT’s Corridor Capacity Preservation Program (CCPP), which is a statewide program intended to manage and preserve the traffic capacity and safety of adopted highway corridors by various means such as limiting access points and using service roads for local vehicle trips. The general purpose of the program is to ensure that existing principal arterial roadways, such as US Route 13, are able to efficiently carry regional traffic without significant impedance from the effects of local development. The program was established in accordance with the provisions of Title 17, Section 145 of the Delaware Code. DelDOT’s CCPP Manager has no objection to the proposed development, and stated that rights-in access can be granted. He indicated that other potential access configurations to/from the King Property development along US Route 13, such as lefts-in or full access, will be determined in part by DelDOT’s Traffic Section.

**Trip Generation**

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Ninth 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:

- Supermarket (ITE Land Use Code 850)
- Drive-In Bank (ITE Land Use Code 912)
- Fast-Food Restaurant with Drive-Through Window (ITE Land Use Code 934)
- High-Turnover Sit-Down Restaurant (ITE Land Use Code 932)

Table 1  
KING PROPERTY – OUTPARCELS PEAK HOUR TRIP GENERATION

Land Use	Weekday PM Peak Hour			SAT Peak Hour		
	In	Out	Total	In	Out	Total
36,170 SF Supermarket	187	180	367	258	247	505
Internal Capture	25	29	54	57	64	121
External Trips	162	151	313	201	183	384
Pass-by Trips (PM 36%, SAT 36%)	56	57	113	69	69	138
<b>Net Supermarket Trips</b>	<b>106</b>	<b>94</b>	<b>200</b>	<b>132</b>	<b>114</b>	<b>246</b>
3,200 SF Drive-In Bank	39	39	78	43	41	84
Internal Capture	8	8	16	13	12	25
External Trips	31	31	62	30	29	59
Pass-by Trips (PM 47%, SAT 47%)	15	14	29	14	14	28
<b>Net Drive-In Bank Trips</b>	<b>16</b>	<b>17</b>	<b>33</b>	<b>16</b>	<b>15</b>	<b>31</b>
3,234 SF Fast-Food Restaurant w/ Drive Through	55	51	106	97	94	191
Internal Capture	11	10	21	29	27	56
External Trips	44	41	85	68	67	135
Pass-by Trips (PM 50%, SAT 50%)	21	22	43	34	34	68
<b>Net Fast-Food Restaurant Trips</b>	<b>23</b>	<b>19</b>	<b>42</b>	<b>34</b>	<b>33</b>	<b>67</b>
9,000 SF High-Turnover Sit-Down Restaurant	53	36	89	67	60	127
Internal Capture	10	7	17	21	18	39
External Trips	43	29	72	46	42	88
Pass-by Trips (PM 43%, SAT 43%)	16	15	31	19	19	38
<b>Net High-Turnover Restaurant Trips</b>	<b>27</b>	<b>14</b>	<b>41</b>	<b>27</b>	<b>23</b>	<b>50</b>
<b>TOTAL NEW TRIPS</b>	<b>172</b>	<b>144</b>	<b>316</b>	<b>209</b>	<b>185</b>	<b>394</b>

Table 2  
KING PROPERTY – OUTPARCELS DAILY TRIP GENERATION

Land Use	Weekday ADT			Saturday ADT		
	In	Out	Total	In	Out	Total
36,170 SF Supermarket	1849	1849	3698	3212	3211	6423
3,200 SF Drive-In Bank	237	237	474	138	138	276
3,234 SF Fast-Food Restaurant w/ Drive Through	802	802	1604	1168	1167	2335
9,000 SF High-Turnover Sit- Down Restaurant	572	572	1144	713	712	1425
<b>TOTAL TRIPS</b>	3460	3460	6920	5230	5229	10459

**Overview of TOA**

**Intersections examined:**

- 1) US Route 13 & North Site Access / Relocated Positive Outcomes Driveway
- 2) US Route 13 & South Site Access
- 3) Voshells Mill Road & Park Lane / Site Access (East Street Extension)
- 4) US Route 13 & Voshells Mill Road\*

\* Analysis of this intersection is only for evaluation of queues. LOS analysis not required.

**Conditions examined:**

- 1) 2014 existing conditions (Case 1)
- 2) 2019 without proposed development (Case 2)
- 3) 2019 with proposed development and 3/4 Site Access (no lefts out) at US Route 13 North Site Access (Case 3)
- 4) 2019 with proposed development and full access at US Route 13 North Site Access (Case 4)

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

**Committed developments considered:**

- 1) Long Acre Village (156 single family detached houses (35 unbuilt), 95 townhomes (44 unbuilt), 18,800 square feet of general office space (all built and occupied), 31,200 square feet of retail space (all built and occupied), and 21,160 square feet of restaurant space (15,000 square feet unbuilt))
- 2) Townsend Fields (106 single family detached houses (75 unbuilt))
- 3) Brookfield Phase IV (104 single family detached houses)
- 4) Sea Brooke Village (18 duplexes (11 unbuilt))
- 5) Sunset Village (90 single family detached houses)
- 6) Camden Station (17,000 square feet of unoccupied retail space)

- 7) Kimco Development, aka Camden Square (13,225 square-foot pharmacy with drive-through window, a 4,835 square-foot convenience store with gas pumps, a 4,590 square-foot fast-food restaurant with drive through, and a 6,160 square-foot high-turnover sit-down restaurant)

### **Intersection Descriptions**

- 1) **US Route 13 & North Site Access / Relocated Positive Outcomes Driveway**  
**Type of Control:** proposed signalized four-leg intersection  
**Northbound approach:** (US Route 13) existing two through lanes; proposed one left-turn lane, two through lanes and one right-turn lane  
**Southbound approach:** (US Route 13) existing two through lanes; proposed one left-turn lane, two through lanes and one right-turn lane  
**Eastbound approach:** (North Site Access) proposed one shared through/left-turn lane and one right-turn lane  
**Westbound approach:** (Relocated Positive Outcomes Driveway) proposed one shared left/through/right-turn lane
  
- 2) **US Route 13 & South Site Access**  
**Type of Control:** two-way yield-controlled (right-in/right-out T-intersection)  
**Northbound approach:** (US Route 13) existing two through lanes separated from southbound lanes by grass median; proposed to remain the same  
**Southbound approach:** (US Route 13) existing two through lanes separated from northbound lanes by grass median; proposed two through lanes and one right-turn lane  
**Eastbound approach:** (South Site Access) proposed one right-turn lane, yield-controlled
  
- 3) **Voshells Mill Road & Park Lane / Site Access (East Street Extension)**  
**Type of Control:** existing two-way stop-controlled (three-leg intersection); proposed two-way stop-controlled (four-leg intersection)  
**Northbound approach:** (Park Lane) existing one shared left/right-turn lane, stop-controlled; proposed one shared left/through/right-turn lane, stop-controlled  
**Southbound approach:** (Site Access) proposed one shared through/left-turn lane (stop-controlled) and one right-turn lane (yield-controlled)  
**Eastbound approach:** (Voshells Mill Road) existing one shared through/right-turn lane; proposed one shared left/through/right-turn lane  
**Westbound approach:** (Voshells Mill Road) existing one shared through/left-turn lane; proposed one shared through/left-turn lane and one right-turn lane

**4) US Route 13 & Voshells Mill Road**

**Type of Control:** signalized four-leg intersection

**Northbound approach:** (US Route 13) one left-turn lane, two through lanes and one right-turn lane

**Southbound approach:** (US Route 13) one left-turn lane, two through lanes and one right-turn lane

**Eastbound approach:** (Voshells Mill Road) one shared through/left-turn lane and one right-turn lane

**Westbound approach:** (Voshells Mill Road) one shared through/left-turn lane and one right-turn lane

**Safety Evaluation**

**Crash Data:** Crash data was obtained within the study area along the site frontages on US Route 13 and Voshells Mill Road, covering the three-year period from October 6, 2012 to October 6, 2015. During the study period, a total of 62 crashes were reported, including 9 personal injury crashes. Two of the crashes were alcohol-related. None of the crashes involved pedestrians. The data indicates that rear-end crashes were the most common type of crash (84%), with the majority of those occurring along southbound US Route 13 approaching the signal at Voshells Mill Road. Most of the crashes occurred during daylight hours (79%) and with dry surface conditions (71%). The highest occurrence of crashes was during the hour of 3:00 PM to 4:00 PM (16% of all crashes). Most crashes were a result of driver inattention, distraction and fatigue (48%) or following too close (27%). There were no fatal crashes within the study area during this time period.

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

**Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** The Delaware Transit Corporation (DTC) currently operates two DART Bus Routes in the immediate project area. Route 104 (Camden Walmart) runs between the Dover Transit Center and the Camden Walmart via US Route 13 with a loop through downtown Camden. Along the US Route 13 site frontage for the proposed King Property development, DART Route 104 only runs in the northbound direction. Along the Voshells Mill Road site frontage, DART Route 104 only runs in the northbound direction. DART Route 106 (Dover Air Force Base) also runs between the Dover Transit Center and the Camden Walmart, but runs along Bay Road and Delaware Route 10 before traveling to and from Walmart via US Route 13 past the proposed King Property development. There is an existing signed bus stop along a sidewalk on eastbound Voshells Mill Road just west of Park Lane (for DART Route 104). There is another existing signed bus stop with no sidewalk or concrete pad on northbound US Route 13 just north of the existing Positive Outcomes Charter School driveway (for DART Routes 104 and 106).

**Planned transit service:** DTC has requested that two new bus stops be provided: one on southbound US Route 13 opposite the Positive Outcomes Charter School driveway and one on westbound Voshells Mills Road opposite Park Lane. The proposed bus stop waiting pads should connect to ADA compliant sidewalks along the proposed site frontage.

**Existing bicycle and pedestrian facilities:** According to DelDOT's Kent County Bicycle Map (dated 2011), US Route 13 along the site frontage is classified as a Connector Bicycle Route with a bikeway that contains high traffic and is challenging for cyclists. Voshells Mill Road along the site frontage is classified as a Connector Bicycle Route with a bikeway. Currently, US Route 13 has wide shoulders but does not contain designated bicycle lanes, signing, or striping. Voshells Mill Road has a shoulder/parking lane in the eastbound direction (no shoulder in the westbound direction) but no designated bicycle lanes, signing, or striping. There are no shoulders for bicyclists near the intersection approaches at US Route 13 and Voshells Mill Road due to the presence of auxiliary lanes, and dedicated bicycle lanes have not been striped between the through and right-turn lanes. According to the bicycle level of service (BLOS) calculator developed by the *League of Illinois Bicyclists*, the US Route 13 and Voshells Mill Road corridors both operate at BLOS A.

There are currently no sidewalks or pedestrian facilities in either direction of US Route 13 along the site frontage. Along Voshells Mill Road, there is a sidewalk on the south side of the road (opposite the proposed King Property site frontage) that terminates approximately 200 west of the stop bar for the signalized intersection at US Route 13. At the signalized intersection of US Route 13 and Voshells Mill Road there are crosswalks with pedestrian signals and pedestrian pushbuttons on the west and south legs of the intersection.

**Planned bicycle and pedestrian facilities:** DBF contacted Marco Boyce with DelDOT's Bicycle and Pedestrian Facilities Team via email on July 10, 2014 regarding planned or requested bicycle and pedestrian facilities in the area of this proposed development. Mr. Boyce provided comments via email on July 11, 2014. DBF received additional bike/ped comments from Cliff Mumford with DelDOT's Development Coordination Section via email on October 16, 2014. DBF also received comments from Tom Meyer with DelDOT's Traffic Section on March 20, 2015, regarding evaluation of a potential pedestrian crossing of US Route 13 at the proposed North Site Access. In summary, DelDOT's comments request that at a minimum the following bicycle and pedestrian related improvements should be considered:

- Construct buffered ADA-compliant shared-use paths along the site frontages of US Route 13 and Voshells Mill Road
- Provide a marked pedestrian crossing across each site entrance
- Evaluate the need for a crosswalk with pedestrian signals across US Route 13 at the proposed North Site Access, and coordinate with DelDOT regarding the details. DBF did assess the need for a crosswalk in this location and determined that one is not warranted at this time, but could be reconsidered for possible inclusion as part of the Camden Bypass and/or the US Route 13 Widening projects.
- Install designated bicycle lanes and signage adjacent to all right-turn lanes into the proposed site.



**Previous Comments**

All comments from DelDOT's Scoping Letter and the Traffic Counts & Preliminary TOA (PTOA) Review were addressed in the Final TOA submission.

**General Analysis Comments**

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

- 1) The TOA analyzed projected 2024 volumes instead of 2019 volumes, with 2024 volumes determined by applying five additional years of background growth. McCormick Taylor analyzed 2019 volumes.
- 2) For unsignalized intersections, the TOA reported delays, LOS and 95<sup>th</sup> percentile queue lengths based on HCM 2010 reports from Synchro. For signalized intersections, the TOA reported delays and LOS based on direct Synchro results (not the HCM 2010 reports from Synchro), and 95<sup>th</sup> percentile queue lengths based on SimTraffic results. For unsignalized intersections, McCormick Taylor reported delays, LOS and 95<sup>th</sup> percentile queue lengths based on HCM 2010 reports from Synchro (same method as the TOA). For signalized intersections, McCormick Taylor reported delays and LOS based on HCM 2010 reports from Synchro, and evaluated 95<sup>th</sup> percentile queue lengths based on Synchro queuing reports (different methods from the TOA).
- 3) For existing unsignalized intersections (i.e. Voshells Mill Road & Park Lane), the TOA applied heavy vehicle factors (HV) by movement using either existing data or 3% (whichever is greater) for all cases, while McCormick Taylor applied HV by movement using existing data for Cases 1 and 2 and using either existing data or 3% (whichever is greater) for Cases 3 and 4. For existing signalized intersections, the TOA and McCormick Taylor applied HV by lane group using existing data for all cases. For new intersections (i.e., proposed site entrances on US Route 13), the TOA and McCormick Taylor assumed 3% HV for each movement.
- 4) For existing conditions, the TOA and McCormick Taylor determined, for each intersection, overall intersection peak hour factors (PHF). For future conditions, the TOA and McCormick Taylor assumed existing PHF for all existing intersections. The TOA and McCormick Taylor assumed a PHF of 0.92 for the proposed site entrances on US Route 13.
- 5) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.

Table 3A  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Operational Analysis for King Property – Outparcels Development  
Report dated November 2015  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>1</sup> Two-Way Stop Control	LOS per TIS		LOS per McCormick Taylor	
	Weekday PM	Saturday Mid-Day	Weekday PM	Saturday Mid-Day
<b>US Route 13 &amp; North Site Access / Relocated Positive Outcomes Driveway <sup>2</sup></b>				
2019 with development and 3/4 Site Access (Case 3)				
Northbound US Route 13 – Left	F (63.3)	C (24.5)	F (58.5)	C (23.4)
Eastbound North Site Access – Right	F (53.0)	C (24.8)	F (49.6)	C (23.9)
2019 with development and Full Site Access (Case 4a) <sup>3</sup>				
Northbound US Route 13 – Left	F (60.0)	D (26.7)	F (58.5)	D (33.1)
Eastbound North Site Access	F (300+)	F (300+)	F (300+)	F (300+)
2019 with development and Full Site Access (Case 4b) <sup>4</sup>				
Northbound US Route 13 – Left	F (60.0)	D (26.7)	F (58.5)	D (33.1)
Eastbound North Site Access	F (300+)	F (300+)	F (300+)	F (233.3)
2019 with development and Full Site Access and Relocated Positive Outcomes (Case 4c) <sup>5</sup>				
Northbound US Route 13 – Left	F (60.0)	D (29.2)	F (56.4)	D (32.8)
Southbound US Route 13 – Left	C (16.3)	C (21.3)	C (20.0)	D (26.0)
Eastbound Site Access	F (300+)	F (300+)	F (300+)	F (300+)
Westbound Positive Outcomes Driveway	F (300+)	N/A <sup>6</sup>	F (300+)	N/A <sup>6</sup>

<sup>1</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>2</sup> For the unsignalized intersection condition, the Relocated Positive Outcomes Driveway was evaluated as part of Case 4c only. All other unsignalized cases evaluate this intersection as a T-intersection.

<sup>3</sup> For Case 4a, the eastbound lane configuration consists of one shared left/right-turn lane.

<sup>4</sup> For Case 4b, the eastbound lane configuration consists of one left-turn lane and one right-turn lane.

<sup>5</sup> For Case 4c, the eastbound lane configuration consists of one shared through/left-turn lane and one right-turn lane. The westbound lane configuration consists of one shared left/through/right-turn lane.

<sup>6</sup> The westbound approach has zero volume for the Case 4c Saturday peak hour scenario.

Table 3B  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Operational Analysis for King Property – Outparcels Development  
Report dated November 2015  
Prepared by Davis, Bowen & Friedel, Inc.

Signalized Intersection <sup>7</sup>	LOS per TIS		LOS per McCormick Taylor	
	Weekday PM	Saturday Mid-Day	Weekday PM	Saturday Mid-Day
<b>US Route 13 &amp; North Site Access / Relocated Positive Outcomes Driveway</b>				
2019 with development and Full Site Access and Relocated Positive Outcomes (Case 4)	E (72.1)	C (34.8)	E (60.1)	B (14.0)
2019 with development and Full Site Access and Relocated Positive Outcomes (Case 4) with Improvement Option 1 <sup>8</sup>	N/A	N/A	D (49.7)	B (11.3)
2019 with development and Full Site Access and Relocated Positive Outcomes (Case 4) with Improvement Option 2 <sup>9</sup>	C (22.1)	B (18.7)	B (16.8)	A (9.3)

<sup>7</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>8</sup> Improvement Option 1 consists of the following lane configurations: northbound US Route 13 one left-turn lane, two through lanes and one right-turn lane; southbound US Route 13 one left-turn lane, two through lanes and one right-turn lane; eastbound site access two left-turn lanes, one through lane and one right-turn lane; and westbound Positive Outcomes driveway one left-turn lane and one shared through/right-turn lane.

<sup>9</sup> Improvement Option 2 includes a third through lane in both directions of US Route 13.

Table 4  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Operational Analysis for King Property – Outparcels Development  
Report dated November 2015  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>10</sup> Two-Way Stop Control (Right-in/Right-Out)	LOS per TIS <sup>11</sup>		LOS per McCormick Taylor <sup>12</sup>	
	Weekday PM	Saturday Mid-Day	Weekday PM	Saturday Mid-Day
US Route 13 & South Site Access 2019 with development (Cases 3 and 4) Eastbound South Site Access – Right	N/A	N/A	E (46.5)	C (23.5)

<sup>10</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>11</sup> The TOA evaluated the eastbound approach as yield-controlled only, and as such their analysis did not include a delay for this movement.

<sup>12</sup> For the purpose of conservative analysis, McCormick Taylor evaluated the eastbound approach as stop-controlled.

Table 5  
PEAK HOUR LEVELS OF SERVICE (LOS)  
based on Traffic Operational Analysis for King Property – Outparcels Development  
Report dated November 2015  
Prepared by Davis, Bowen & Friedel, Inc.

Unsignalized Intersection <sup>13</sup> Two-Way Stop Control	LOS per TIS		LOS per McCormick Taylor	
	Weekday PM	Saturday Mid-Day	Weekday PM	Saturday Mid-Day
<b>Voshells Mill Road &amp; Park Lane / Site Access</b>				
2014 Existing (Case 1)				
Northbound Park Lane	B (10.7)	A (9.9)	B (10.7)	A (9.8)
Westbound Voshells Mill Road – Left	A (7.9)	A (7.8)	A (7.9)	A (7.7)
2019 without development (Case 2)				
Northbound Park Lane	B (11.1)	B (10.2)	B (10.9)	B (10.0+)
Westbound Voshells Mill Road – Left	A (8.0)	A (7.9)	A (7.9)	A (7.8)
2019 with development (Case 3) <sup>14</sup>				
Northbound Park Lane	B (12.1)	B (10.7)	B (11.9)	B (10.6)
Southbound Site Access	C (18.8)	C (17.5)	C (18.5)	C (17.1)
Eastbound Voshells Mill Road – Left	A (7.7)	A (7.6)	A (7.7)	A (7.6)
Westbound Voshells Mill Road – Left	A (8.0)	A (7.8)	A (8.0)	A (7.8)
2019 with development (Case 4)				
Northbound Park Lane	B (12.1)	B (10.7)	B (11.9)	B (10.6)
Southbound Site Access	B (12.7)	B (11.7)	B (12.5)	B (11.6)
Eastbound Voshells Mill Road – Left	A (7.7)	A (7.6)	A (7.7)	A (7.6)
Westbound Voshells Mill Road – Left	A (8.0)	A (7.8)	A (8.0)	A (7.8)
2019 with development (Case 4) with Improvement Option 1 <sup>15</sup>				
Northbound Park Lane	N/A	N/A	B (11.9)	B (10.6)
Southbound Site Access	N/A	N/A	B (12.5)	B (11.6)
Eastbound Voshells Mill Road – Left	N/A	N/A	A (7.7)	A (7.6)
Westbound Voshells Mill Road – Left	N/A	N/A	A (7.9)	A (7.8)

<sup>13</sup> The numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

<sup>14</sup> The TOA assumed the following lane configurations in their base Case 3 and Case 4 analyses: northbound one shared left/through/right-turn lane; southbound one shared through/left-turn lane and one right-turn lane; eastbound one left-turn lane and one shared through/right-turn lane; and westbound one shared through/left-turn lane and one right-turn lane.

<sup>15</sup> Improvement Option 1 includes the following lane configurations with turn lanes consistent with DelDOT's *Auxiliary Lane Worksheet*: northbound one shared left/through/right-turn lane; southbound one shared through/left-turn lane and one right-turn lane; eastbound one left-turn lane, one through lane and one right-turn lane; and westbound one left-turn lane, one through lane and one right-turn lane.