



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

JENNIFER COHAN
SECRETARY

June 20, 2016

Mr. Joe Caloggero
The Traffic Group, Inc.
Suite H
9900 Franklin Square Drive
Baltimore, MD 21236

Dear Mr. Caloggero:

Please find the revised Traffic Operational Analysis (TOA) review letter for the **Camden Square** commercial development (Tax Parcels NM-02-094.12-01-01.00-000, 03.00-000, 04.00-000, 22.00-000, 23.00-000) enclosed with this correspondence. This revised letter replaces our letter of March 15, 2016, and has been updated with respect to the proposed site entrance on Delaware Route 10. 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 black ink, appearing to read "Troy Brestel".

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. David Kuklish, Bohler Engineering, Inc.
Mr. L. Aaron Chaffinch, Town of Camden
Mr. Andrew Parker, McCormick Taylor, Inc.
DeIDOT 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, Traffic, DOTS
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



June 20, 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 12A – Camden Square

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Operational Analysis (TOA) for the Camden Square commercial development prepared by The Traffic Group, Inc. (TTG), dated March 17, 2015. This review was assigned as Task Number 1 (Subtask 12A). TTG prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual*.

This letter replaces our letter of March 15, 2016. We have revised the letter with respect to the proposed site entrance on Delaware Route 10. Revised Level of Service (LOS) tables will be provided in a separate letter.

Following their submission of the TOA, TTG submitted a Traffic Signal Justification Study (TSJS) dated September 17, 2015, for the intersection of Delaware Route 10 (Kent Road 29) and Rising Sun Road (also Kent Road 29). 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 Camden Square commercial development, proposed to be located on the northeast corner of US Route 13 (South DuPont Highway / Kent Road 24) and Delaware Route 10 in the Town of Camden, Kent County, Delaware. The proposed commercial development would include a 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 a drive through window, and a 6,160 square-foot high-turnover sit-down restaurant. One full-movement signalized access point is proposed along US Route 13 via the addition of an eastern leg to the intersection of US Route 13 and Old North Road (Kent Road 193), and one full-movement signalized access point is proposed along Delaware Route 10 via the addition of a northern leg to the intersection of Delaware Route 10 and Rising Sun Road. Two rights-in-only access points are also proposed, one along northbound US Route 13 just north of Delaware Route 10 and one along westbound Delaware Route 10 just west of Rising Sun Road. Construction is anticipated to be complete by 2016.

Subsequent to submission and initial review of the TOA, and upon further coordination with DelDOT, the developer revised their proposed site access to include only the full-movement access on US Route 13 at Old North Road, the rights-in access on US Route 13, and the rights-in

access on Delaware Route 10 west of Rising Sun Road. No other access point is currently proposed on Delaware Route 10.

The land is currently zoned C-2 (Highway Commercial) within a Heritage Zone overlay in 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 several associated with DelDOT's Hazard Elimination Program (HEP), which has two sites at the intersection of US Route 13 and Delaware Route 10. 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. This site is identified in the 2002, 2008 and 2012 HEP. The second project, which is 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. 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 Delaware Route 10 intersection. 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 and the extension of Old North Road to the east to ultimately connect with Delaware Route 10 east of Rising Sun Road. While the schedule for the Camden Bypass project is not set at this time, the site plan for the proposed Camden Square development would need to accommodate the possible future extension of Old North Road east of US Route 13 and through the site for a connection to Delaware Route 10 east of the site.

Another DelDOT project entails a shared-use path from the Gateway Shopping Center (on Delaware Route 10 east of the study area) to Brecknock Park (west of US Route 13 north of the study area). The shared-use path is proposed to run along Delaware Route 10, cross to the west side of US Route 13 via Old North Road, and run north along Old Camden Road. There are two possible locations for the shared-use path on the lands of the Camden Square development, and the developer would need to accommodate the possible future path through the site. The schedule for final design and construction of this section of the proposed shared-use path is undetermined at this time.

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 Delaware Route 10 is identified in that study for signing and striping improvements, and the developer would be responsible for implementing improvements at that intersection as recommended by the study.

Based on our review of the TOA as submitted, we have the following comments and recommendations:

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

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
Delaware Route 10 & Rising Sun Road / East Site Access	Unsignalized	2014 Existing AM and PM (Case 1); 2016 AM and PM without and with Camden Square (Cases 2, 3 and 4)
US Route 13 & Delaware Route 10	Signalized	2014 Existing AM (Case 1); 2016 AM and PM without and with Camden Square (Cases 2, 3 and 4)

Per the DelDOT TOA Scoping Meeting Minutes, as part of the TOA, a TSJS was required for the intersection of Delaware Route 10 and Rising Sun Road / Proposed East Site Entrance. While the TOA included a signal warrant analysis, DelDOT requires more information in a TSJS. Consequently, as discussed above, TTG later submitted a separate TSJS. The existing intersection is an unsignalized T-intersection with stop control on the northbound Rising Sun Road approach. The signal warrant analysis included in the TOA concluded that the traffic volumes for both existing and proposed conditions meet the necessary warrants for installing a traffic signal at this intersection. Along with converting the intersection to signalized control as proposed by the TOA, a fourth leg would be added to serve as a site entrance. McCormick Taylor conducted a separate signal warrant analysis based on the existing and projected volumes and found that, *based on the volumes alone*, a traffic signal *may* be warranted at this location. However for the reasons described below, a traffic signal is not recommended for the intersection of Delaware Route 10 and Rising Sun Road / Proposed East Site Entrance at this time. The recommendations in this review letter are based on no signal being installed at this proposed site entrance intersection.

The TSJS does not sufficiently address the concerns of DelDOT's Traffic Section. Upon their review of the TSJS, DelDOT's Traffic Section remains concerned about the proximity of the proposed signal at Rising Sun Road to the existing signal at the intersection of US Route 13 and Delaware Route 10 (located approximately 600 feet apart). The TSJS does not satisfactorily demonstrate that acceptable traffic operations and safety would be achieved between the signalized intersections on Delaware Route 10, particularly related to queuing and weaving maneuvers between the two signals and the right-turn movement from westbound Delaware Route 10 merging onto northbound US Route 13. Further a signalized entrance at this location is inconsistent with the long term plans for this area as part of the Camden Bypass project. Finally, the proposed site will already have a full-movement signalized access (on US Route 13 opposite Old North Road), so all movements to and from the site are accommodated.

Therefore, regarding site entrances for the proposed Camden Square development, we currently recommend one signalized full-movement access point on US Route 13, one unsignalized rights-in-only access point on US Route 13, and one unsignalized rights-in / rights-out access point on Delaware Route 10. At US Route 13 and Old North Road, a fourth leg should be added to the existing signalized T-intersection. On US Route 13 between Delaware Route 10 and Old North Road, a one-way entrance into the site should be constructed. On Delaware Route 10, the access should be located across from Rising Sun Road.

The signalized intersection of US Route 13 and Delaware Route 10 exhibits LOS deficiencies during existing and future conditions. In order to achieve acceptable LOS under future conditions with the proposed Camden Square development, atypical assumptions were needed for two analysis parameters (peak hour factor and saturation flow rate). Alternatively, acceptable LOS could be achieved under future conditions if a third through lane were added each way along northbound and southbound US Route 13. We do not recommend that such improvements be implemented by the developer, but they will be incorporated as part of a DelDOT HEP project.

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 US Route 13 site frontage, the developer should provide a bituminous concrete overlay to the existing shoulder, at DelDOT's discretion. DelDOT should analyze the shoulder's 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.
2. Along the Delaware Route 10 site frontage, the developer should provide a bituminous concrete overlay to the existing shoulder and travel lanes, at DelDOT'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.

- The developer should construct the North Site Entrance along US Route 13 at Old North Road as a new eastern leg to the existing signalized intersection. The proposed configuration of the improved intersection with the new site entrance is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound US Route 13	One left turn lane and two through lanes	One left turn lane, two through lanes and one right-turn lane
Southbound US Route 13	Two through lanes and one right-turn lane	One left-turn lane, two through lanes and one right-turn lane
Eastbound Old North Road	Two left-turn lanes and one right-turn lane *	Two left-turn lanes, one through lane and one right-turn lane *
Westbound North Site Entrance	Approach does not exist	Two left-turn lanes, one through lane and one right-turn lane

* The eastbound approach currently includes pavement for an additional lane between the rightmost left-turn lane and the right-turn lane, which is currently hatched out with striping. The proposed configuration will require striping changes on this approach, which may also require an overlay.

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	325 feet *	290 feet **
Southbound US Route 13	225 feet ***	240 feet *
Eastbound Old North Road	175 feet *	275 feet *
Westbound North Site Entrance	140 feet ***	190 feet ***

* indicates existing turn lane length; final length to be determined by DeIDOT during site plan review process

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

*** turn lane length based on storage length per queuing analysis

Because construction of the westbound North Site Entrance will likely require closure of the entrance to the adjoining property to the north, the plan for the subject development must include an interconnection to that property for the purpose of providing access.

4. The developer should enter into a traffic signal agreement with DelDOT for the intersection of US Route 13 and Old North Road / North Site Entrance. The agreement will cover signal adjustments required by the physical improvements described in Item No. 3. The agreement should include pedestrian signals, crosswalks, interconnection, and ITS equipment such as CCTV cameras at DelDOT's discretion. One or more other developers may 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 construct the rights-in-only Site Entrance on northbound US Route 13 between Delaware Route 10 and Old North Road. The design of this entrance should include a separate right-turn lane on northbound US Route 13. The details of the exact entrance location and the length of the northbound right-turn lane for this US Route 13 site entrance will be determined by DelDOT 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.

6. The developer should construct the rights-in / rights-out Site Entrance on westbound Delaware Route 10 across from Rising Sun Road. The proposed configuration of the intersection including the new site entrance is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Rising Sun Road	One shared left/right turn lane with concrete channelizing island for right turns	One left-turn lane and one right-turn lane
Southbound East Site Entrance	Approach does not exist	One right-turn lane only
Eastbound Delaware Route 10	One left (u-turn) lane, two through lanes and one right-turn lane	Two through lanes and one right-turn lane
Westbound Delaware Route 10	One left-turn lane and two through lanes	One left-turn lane, two through lanes and one right-turn lane

The developer should coordinate with DelDOT to determine the exact design of this intersection, including final turn-lane lengths, appropriate signing, widening of the northbound Rising Sun Road approach, concrete channelization islands, and further details of the entrance during the site plan review process.

Once construction of the Camden Bypass project begins, this site entrance must be relocated to the west along Delaware Route 10 closer to US Route 13. Once the relocated new site entrance is constructed, the initial site entrance on Delaware Route 10 opposite Rising Sun Road will be closed. Alternatively, if the site is developed after construction of the Camden Bypass project begins, the Delaware Route 10 site entrance will be built only in this ultimate location. Consistent with the initial site entrance, the relocated site entrance will be unsignalized and will have a right-in/right-out configuration. In the ultimate location, it will be a three-leg intersection instead of a four-leg intersection. The details of the exact entrance location and the length of the westbound right-turn lane for the ultimate Delaware Route 10 site entrance will be determined by DelDOT during the site plan review process. The ultimate location of the Delaware Route 10 site entrance and an internal site layout that accommodates both the initial site entrance location and the ultimate site entrance location will need to be incorporated into the final site plan before it can be approved by DelDOT.

7. The developer should coordinate with DelDOT regarding refinement of the Camden Square site plan as needed to support the future extension of Old North Road east of US Route 13 and through the site for a connection to Delaware Route 10 east of the site. The extension of Old North Road may occur as part of the proposed “Camden Bypass Concept – Option B” plan developed by DelDOT and subsequently adopted into the Town of Camden Comprehensive Plan.
8. 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 northbound US Route 13 at the North Site Entrance, at the start of the right-turn lane on northbound US Route 13 at the rights-in only Site Entrance, and at the start of the right-turn lane on westbound Delaware Route 10 at the rights-in / rights-out Site Entrance.
 - b. Adjacent to the right-turn lanes along northbound US Route 13 at the North Site Entrance, along northbound US Route 13 at the rights-in only Site Entrance, and along westbound Delaware Route 10 at the rights-in / rights-out Site Entrance, a minimum of a five foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
 - c. Appropriate bicycle symbols, directional arrows, striping (including stop bars), and signing should be included along bicycle facilities and right-turn lanes within the project limits.
 - d. Utility covers should be made flush with the pavement.
 - e. Bike parking should be provided near the building entrances within this development. Where the building architecture provides for an awning or other overhang, the bike parking should be covered.
 - f. Along US Route 13, a minimum of a five-foot wide sidewalk that meets current AASHTO and ADA standards should be constructed along the site frontage. The

sidewalk should have a minimum of a five-foot buffer from the roadway. At the northern property boundary, the sidewalk 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 sidewalk should connect to the proposed sidewalk along the Delaware Route 10 site frontage.

- g. Along Delaware Route 10, a minimum of a five-foot wide sidewalk that meets current AASHTO and ADA standards should be constructed along the site frontage. The sidewalk should have a minimum of a five-foot buffer from the roadway. At the eastern property boundary, the sidewalk should connect to the shoulder of Delaware Route 10 in accordance with DelDOT's *Shared Use Path and/or Sidewalk Termination Policy* dated June 19, 2014. At the western property boundary, the sidewalk should connect to the proposed sidewalk along the US Route 13 site frontage.
- h. The developer should coordinate with DelDOT regarding refinement of the Camden Square site plan as needed to support a possible future shared-use path through the site as part of a DelDOT project to construct a path from the Gateway Shopping Center to Brecknock Park.
- i. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings, including all site entrances. Type 3 curb ramps are discouraged.
- j. In addition to the site frontage sidewalks 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 the proposed frontage sidewalks and bus stop waiting pads along US Route 13 and Delaware Route 10.
- k. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to eliminate vehicular overhang onto the sidewalk.
- l. The developer should coordinate with the Delaware Transit Corporation (DTC) regarding the possible addition of two ADA-compliant bus stop waiting pads; one at the existing bus stop location along US Route 13 northbound and one along Delaware Route 10 westbound east of the proposed rights-in site access point. The bus stop waiting pads may include amenities such as a shelter, trash receptacle and lighting. Internal sidewalks should be connected to any new transit facilities and parking facilities for bicyclists should be included. 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 (noted above in Item No. 8).



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. 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.

Please contact me at (302) 738-0203 or through e-mail at ajparker@mtmail.biz if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.

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

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

Enclosure