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October 21, 2022

Via Email and US Mail

Tom Sahol – Township Administrator
Township of Chesterfield
295 Bordentown-Chesterfield Road
Chesterfield, NJ 08515

**Re: Old York Country Club Redevelopment
Traffic Impact Study Review
228 Old York Road
Block 701, Lot 2.01
Our File No. HCD00701.01**

Dear Mr. Sahol:

In accordance with your authorization, our office has performed a review of the above referenced Traffic Impact Study including the following documents:

- Traffic Impact Study for Old York Road Industrial Properties, LLC, U.S. Route 206 Northbound Bordentown Township, prepared by Langan Engineering, dated October 15, 2021, revised January 28, 2022. **(Bordentown Warehouse)**
- Traffic Impact Study prepared by Bright View Engineering, dated April 27, 2021, for proposed Old York Country Club warehouse. **(Proposed Chesterfield Warehouse)**
- Site Trip Distribution Memo and map, provided by Bright View Engineering dated July 8, 2022;

Summary of Findings:

In May of 2021, our office had previously prepared a review of a Traffic Impact Study prepared by Bright View Engineering for a proposed warehouse to be located on the former Old York Country Club property in Chesterfield Township. At that time, based on our review of that report, we had the following general conclusions regarding the likely traffic impact of the proposed 1.3 million s.f. warehouse:

- The Study uses conservative numbers to determine traffic impacts based on the highest potential impacts, and it is likely that actual impacts if the proposed project were to be constructed would be less than indicated in the TIS.
- Per the TIS, existing traffic on US Route 206 northbound can queue back to the intersection of Old York Road, and existing delays on Old York Road at the intersection currently experience a Level of Service (LOS) of F during peak periods.
- Traffic from the proposed warehouse would add 38 seconds of delay during the AM peak hour and 111 seconds of delay during the PM peak hour to the westbound leg of the



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intersection of Old York Road and US Route 206 northbound if no mitigation measures are included.

- However, the proposed improvements to the intersection to add a merging lane onto Route 206 northbound within the shoulder would mitigate much of the existing delay and actually improve traffic flow at the intersection.
- While no future traffic movements can be projected with 100% certainty, the proposed measures to ensure trucks exit the site by making a left turn onto Old York Road and head towards US Route 206, which include the proposed signage, and specifically the proposed geometry of the driveway, along with the anticipated routing of trucks towards the highways as their primary destination, makes it unlikely that any truck traffic would be directed east on Old York Road towards Georgetown Road from the Old York Country Club property.
- General vehicular traffic from employees of the proposed warehouse would be permitted to turn right out of the facility towards Georgetown Road, however the volume of traffic is not anticipated to create significant traffic impacts or delays in other areas of the Township.
- It is also anticipated that most vehicular traffic from employees of the proposed warehouse would also be coming from and going to US Route 206 and ultimately the New Jersey Turnpike, rather than travelling through Chesterfield Township.

Since that time, there has been a new warehouse proposed also on Old York Road in neighboring Bordentown Township, just southwest of the Old York Country Club property. We have reviewed the materials provided regarding the proposed new warehouse in Bordentown Township, and have compared them to our previous review of the traffic impact reports for the proposed Old York Country Club warehouse in Chesterfield Township to determine the extent to which the additional traffic volumes projected to be generated by this new warehouse would change the findings and conclusions that were previously reached after review of the proposed warehouse in Chesterfield.

The following is a summary of the findings of the Bordentown warehouse Traffic Impact Studies and our conclusions based on those reports:

- Traffic impact from this warehouse would not be significant.
- The proposed warehouse would add 9 seconds of delay during the AM peak hour and 4 seconds of delay during the PM peak hour to the westbound leg of the intersection Old York Road and US Route 206 northbound, with no mitigation.
- The warehouse facility and its driveway onto Old York Road have been designed specifically to direct truck traffic west on Old York Road towards US Route 206, and trucks would be prohibited from exiting the warehouse site and traveling east towards Georgetown Road.



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- A right-in/right-out driveway is proposed on US Route 206 northbound, which makes it likely that most truck traffic from this warehouse would utilize this direct access to Route 206 rather than utilizing the driveway on Old York Road.
- We note that the base traffic volumes on Route 206 northbound collected for the Bordentown TIS are lower than those that were utilized for the Chesterfield TIS.
- The Traffic Impact Studies have followed best engineering practices and our office takes no exception to the methodology or conclusions of the reports.

The chart below compares the difference between existing volumes, No-Build Delays, Build Delays, and the difference in additional delay that are projected to result each respective warehouse as described in their associated Traffic Impact Studies, with respect to impacts at the intersection of Old York Road and Route 206.

Summary Chart – Old York Road at US Route 206 Northbound				
	Existing Volume (206 NB traffic)	Westbound Approach No-Build Delays AM / PM Peak	Westbound Approach Build Delays AM / PM Peak	Additional Delay AM / PM Peak (Warehouse Traffic)
Proposed Chesterfield Warehouse	AM – 1,777 PM – 1,628	AM – 64s (LOS F) PM – 35s (LOS D)	AM – 102s (LOS F) PM – 146s (LOS F)	AM – 38s PM – 111s
Bordentown Warehouse	AM – 1,284 PM – 1,492	AM – 36s (LOS E) PM – 22s (LOS C)	AM – 45s (LOS E) PM – 26s (LOS D)	AM – 9s PM – 4s

The projected traffic impacts from the Bordentown warehouse add minimal traffic volume or delays to the intersection. The noted additional 38 second and 111 second delays during peak hour for the proposed Chesterfield warehouse is only if no mitigation at the intersection is included. If the intersection is improved to include an acceleration lane onto Route 206 northbound, traffic would be allowed to free flow onto Route 206 and delays would be significantly decreased.

The traffic professionals representing the contract purchaser of the Old York Country Club property have also provided additional materials regarding the proposed warehouse on the property, which we have reviewed. An updated trip distribution memo and a map diagramming the anticipated traffic impacts on particular intersections throughout Chesterfield Township, were submitted for consideration. Utilizing a gravity model to estimate the likely sources and destinations of trips to and from the proposed warehouse determined that most intersections within Chesterfield Township would experience insignificant traffic impacts. The majority of traffic to and from the proposed warehouse would be isolated to the southwestern end of the Township.

We find the methodology used for this memo, map, and trip distribution estimate to be acceptable and we do not dispute its overall findings.



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Technical Review and Comments:

The Traffic Impact Study dated October 15, 2021, revised January 28, 2022 for the Bordentown warehouse details the impacts along the nearby roadway network for a proposed development that consists of a 301,470 s.f. warehouse building. The warehouse will have two (2) access driveways, one full movement driveway along Old York Road (CR 660) that will have truck turn restrictions in place and configured to dissuade large vehicles from attempting to maneuver out from the property onto Old York Road eastbound towards Georgetown Road and one right-turn in/out driveway along US Highway 206.

The report indicates that all tractor trailers entering/exiting the site will be guided toward US Route 206 and trucks will be restricted from traveling east on Old York Road. Personal vehicular traffic would be permitted to travel on Old York Road through Chesterfield Township.

We offer the following comments for review of the Bordentown Traffic Impact Study:

1. Manual turning movement counts occurred in September 2021.
2. Volumes were grown using a background growth factor of 1.50% to 2023 no-build volumes.
3. Per the Institution of Traffic Engineers (ITE) Trip Generation Manual 10th Generation, the proposed warehouse will increase trips per the table below:

Land Use Code (LUC)	Size (sf)	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Warehouse (150)	301,470	42	22	64	17	52	70
Applicant's Volumes		54	28	82	22	68	90

The TIS is utilizing higher volumes than the ITE trip generation manual. Same will provide a more conservative analysis. We note that a more recent version of the ITE manual has been published, the 11th edition, which estimates that proposed trips would be 0.01 trips per 1,000 s.f. less than was estimated by the 10th edition. This equates to a difference of 3 fewer cars for AM and PM peak hours if the more recent manual were to be utilized.

4. The Bordentown warehouse Traffic Impact Study utilized a gravity model with Journey to Work data from 2018 census data. Additionally, it is stated that the trucks are anticipated to utilize the New Jersey Turnpike, Interstate 195, Interstate 295, and US Route 68. Signage and the driveway egress geometry will be provided to ensure that trucks will turn right onto Old York Road and travel to US Route 206.



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5. It appears there are some trip distribution volume discrepancies in the Bordentown warehouse TIS. It does not appear that Figure 6 and 7 volumes match the anticipated trip generation volumes. For instance, the AM passenger vehicle out trip generation volumes are 13 while only 10 are depicted and the AM truck trip generation volumes out are 15 while only 12 are depicted. Additionally, the 23% trip distribution from Old York Road is inconsistent. It appears that the volumes that should be coming from same are lower in Figure 6 than 23% of the trip generation which was stated earlier in the TIS.
6. If delays on US Route 206 northbound potentially redirect vehicles from the warehouse site to other roadways, there is a possibility that additional vehicles would head east on Old York Road towards Georgetown Road. Based on the data provided, this would equate to on average one (1) additional vehicle every two (2) minutes passing through Chesterfield during both peak hours, in the event that delays on Route 206 cause vehicles to seek alternative routes to their destination. It should be noted that this is a very conservative number and actual traffic may be less.
7. We note that the Bordentown warehouse study does not account for any potential trips from the proposed warehouse at the Old York Country Club property in Chesterfield. It utilizes existing traffic volumes and growth factors. To be conservative, it is not uncommon for TIS to incorporate potential traffic volumes from other proposed unbuilt projects.
8. The Bordentown warehouse Traffic Impact Study provides analysis for three (3) intersections:
 - a. US Route 206 NB at Old York Road (southern intersection):
 - i. The westbound right turn approach depicts an increase from 35.7 seconds (LOS E) to 44.9 seconds (LOS E) and 21.5 seconds (LOS C) to 25.6 seconds (LOS C) during the AM and PM peak hours, respectively.
 - ii. It should be noted that the TIS for the Chesterfield warehouse had an existing delay of 64 seconds (LOS F) which increased to 102 seconds during the AM peak hour and 35 seconds (LOS E) to 146 seconds (LOS F) during the PM peak hour. The existing traffic volumes for the Bordentown warehouse study were completed September 2021 whereas the previous study for Old York Country Club in Chesterfield utilized 2017 volumes that were then grown to build volumes. While both sets of existing volumes were collected per best engineering practices at the times of the studies, changes in traffic volume due to COVID-19, construction, time of year, and what was open can modify the volumes.
 - iii. It should be noted that as a part of the conceptual plan for the proposed Chesterfield warehouse, a reconstruction of the shoulder on Route 206 NB from Old York Road would be included to provide a formal acceleration lane, which would eliminate the stop condition and provide free flow operation and an acceleration lane. The



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reconstruction would decrease the delay to 0 seconds (LOS A). This proposed reconstruction requires NJDOT and Burlington County approval.

- b. US Route 206 at Bordentown Warehouse Site Driveway
 - i. The westbound driveway approach of Old York Road operates at a delay of 30.4 seconds (LOS D) and 20.7 seconds (LOS C) during build conditions for AM and PM peak hour, respectively.
 - ii. The Study for the proposed Chesterfield warehouse noted that due to existing delays along Route 206, it is anticipated that delays at westbound Old York Road will still occur. It is assumed that queues would then extend to this intersection as well which is north of Old York Road. Information such as 95th percentile queuing was not provided, but would be beneficial for any future traffic impact studies.
 - c. Old York Road at Bordentown Site Driveway
 - i. The driveway approach onto Old York Road operates at LOS A for both the AM and PM peak hours during the build condition.
 - ii. The Old York Road eastbound through/left-turn movement operates at LOS A for both the AM and PM peak hours during build condition.
 - iii. A left-turn warrant analysis for eastbound Old York Road was completed at the site entrance to determine if a left-turn storage lane should be proposed which would permit through traffic to go around left-turning vehicles. The approach volumes did not satisfy the warrant and with the proposed LOS, it does not appear that one is needed.
 - d. No analysis was completed for the intersection of Route 206 at Connector Road. Due to the Chesterfield warehouse TIS suggesting that six (6) trucks may utilize Route 206 SB coming from Route 206 NB, and the use of the left-turn lane for southbound vehicles on Route 206, it is unclear what the effect of on the intersection may be. This information would be beneficial in any future analysis.
9. The TIS for the proposed warehouse in Chesterfield (the more conservative study) mentioned that queuing along northbound US Route 206 would cause delays at Old York Road. This Bordentown TIS does not identify any impact due to queuing on US Route 206 northbound back to the intersection at Old York Road.
10. The report utilized ITE Trip Generation volumes that provides higher volumes than the typical volumes utilized for a warehouse traffic study. This provides a conservative analysis of Build conditions to determine the worst case scenario for LOS and delay increase at overall



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intersections/approaches. This worst case scenario is not necessarily guaranteed to occur, and actual realized traffic delay increases are likely to be lower.

Trip Distribution Review

We offer the following comments for review of the July 2022 Brightview Site Trip Distribution Memo:

1. The Site Trip Distribution memo has a different trip distribution than the initial TIS as depicted below:

Trip Distribution	Site Trip Distribution (From Memo)	Gravity Model Based Distribution (In the TIS)	Sensitivity Analysis Distribution (In the TIS)
To/From US Route 206 to the North	30.0%	63.1%	45.0%
To/From US Route 206 to the South	35.0%	20.3%	15.0%
To/From Georgetown Road to the North	20.0%	3.2%	21.0%
To/From Georgetown Road to the South	10.0%	5.1%	9.0%
To/From Old York Road to the East	5.0%	8.3%	10.0%
Total Trip Distribution	100.0%	100.0%	100.0%

It is unclear why the percentage changed between the TIS and the Memo. While the percentages still appear reasonable, the reason for the change could be clarified. It should be noted that the Sensitivity analysis has 40% of the warehouse trips utilizing the roadways in Chesterfield Township while the updated Site Trip Distribution has 35% of the warehouse trips. This 5% difference equates to 9 vehicles during the AM peak hour and 11 vehicles during the PM peak hour. With the current distribution provided, there would be no more than 2 additional vehicles at any approach. The difference in vehicles will not have a significant impact on the overall roadway network.

2. It is unclear where the single vehicle from the site at the intersection of Bordentown Crosswicks Road & Shanahan Lane goes. It appears that it heads east on Bordentown Crosswicks Road, takes a left at Crosswicks Chesterfield Road & Front Street, takes a left at Crosswicks Chesterfield Road/New Street & Main Street/Ellisdale Road, and a right on Church Street & Main Street/Ward Avenue. If the vehicle was heading to northbound Church Street it would have continued straight on Buttonwood Street, taken a right on Ward Avenue and a Left on Church Street or a right on Front Street, left on Church Street. While the single vehicle takes a longer route on the distribution pdf, the vehicle is included in higher volume intersections which would depict a conservative analysis.



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3. There is a single vehicle that heads to/from Old York Road, heads south on Crosswicks Chesterfield Road, and then south on Chesterfield Arneytown Road. These vehicles would most likely just head south on Bordentown Chesterfield Road which cuts off distance and an extra intersection. The vehicles in question are circled below.



4. While there are a couple of vehicles that could be redistributed differently, our office does not have an issue with the distribution provided throughout the Chesterfield Township within the memo and map. The amount of vehicles that would utilize each intersection throughout the township is minimal and would not have significant effects on same.

Conclusions

Below are our office's comments and conclusions on the impact that both warehouses together could have on the local roadway network:

1. The intersection of US Route 206 NB and Old York Road
 - a. The increase of approximately 9 seconds and 4 seconds during the AM and PM peak hours, respectively, for the Bordentown warehouse combined with the approximate increase of 38 seconds and 111 seconds during the AM and PM peak hours,



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respectively, for the Chesterfield warehouse is cause for concern. However, with the proposal for the Chesterfield warehouse including mitigation by reconstructing the intersection and providing an acceleration lane, this would provide free flow for the westbound approach and address these concerns. While the acceleration lane will decrease the delay to 0 seconds in the capacity analysis, the delay due to the queuing on northbound US Route 206 will still potentially delay westbound vehicles on Old York Road.

2. The intersection of US Route 206 NB at Connector Road

- a. The Bordentown warehouse TIS did not include this intersection. Our office would typically request that this intersection be analyzed for an application due to the amount of truck traffic that will utilize intersection. The TIS for the proposed Chesterfield warehouse depicts a minimal increase in delay for the intersection. While delays will increase more due to both potential warehouses, it does not appear that any approaches would increase to LOS F due to the increase in trips, and we note that the lower levels of traffic generated by the Bordentown warehouse would likely result in less of an impact at this intersection than the impacts concluded by the Chesterfield TIS.

3. Old York Road

- a. The two TIS's do not depict any significant increases in delay along the intersection of Old York Road at Georgetown Road as well as the intersection of Old York Road at Bordentown Chesterfield Road.
 - i. Determining the most conservative amount of trips that could utilize Old York Road for each warehouse, the worst case scenario is 44 passenger vehicles would be heading southbound and 12 passenger vehicles would be heading northbound during the AM peak hour and 12 passenger vehicles heading northbound and 47 vehicles heading southbound during the PM peak hour. This equates to on average, less than one (1) additional vehicles every one (1) minute passing through Chesterfield Township during both peak hours. It should be noted that this is a very conservative number. A significant amount of the vehicles would most likely head north on Georgetown road towards Bordentown Township.

4. In conclusion, our previous concerns about the queuing along US Route 206 remain. There could be additional delays at the proposed Bordentown warehouse driveway egress due to same. While mitigation at US Route 206 NB at Old York Road is suggested, timing adjustments and queuing mitigation at the downstream intersections should also be considered and could help to address these concerns.



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Should you have any questions regarding this application, please feel free to reach out.

Very truly yours,
CME ASSOCIATES

Russell Schlafer, PE, PTOE
Traffic Engineer

RS:CD