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July 28, 2010

Mr. Francis J. Hanney
District Traffic Services Manager
PennDOT Engineering District 6-0
7000 Geerdes Boulevard
King of Prussia, PA 19406

RE: Response to Comments – Preliminary Review
Teva Pharmaceuticals Warehouse/Distribution Center
Traffic Log No.: B10-005XQ
McMahon Project No. 810150.11

Dear Mr. Hanney:

McMahon Associates, Inc. offers the following responses to your comment letter dated June 24, 2010, which were preliminarily discussed at a technical meeting with the Department on July 20, 2010, that included representatives from the Township's Traffic Engineer, Carroll Engineering, via conference call. Attendees of that meeting included Fran Hanney, N.B. Patel, and Scott Brown of PennDOT 6-0, Jeremy Chrzan of Pennoni (DOT Consultant), Roy Rieder and John Norman of Carroll Engineering via phone, and Casey Moore and Ken O'Brien of McMahon.

PRELIMINARY COMMENTS

Comment #1: *The study assumes that motorists traveling from points east on County Line Road (S.R. 2038) destined northbound on Limekiln Pike will utilize the existing portion of Limekiln Pike. Additionally, motorists traveling from points south on Limekiln Pike destined northbound on Limekiln Pike will utilize Lower State Road (S.R. 3003) and the proposed Limekiln Pike spur. Furthermore, motorists in the westbound County Line Road (S.R. 2038) shared thru-right lane at Lower State Road (S.R. 3003) may either turn at that intersection or turning right onto the exiting portion of Limekiln Pike. Based on the analysis, and as previously discussed, adequate guide signing will be a required component of the signing and pavement marking design. Additionally, despite the anticipated distributions, the actual distribution of traffic through these intersections may differ from the anticipated values; as such, a condition statement will become a requirement of this project to monitor the affected intersections in the post-development condition and adjust signal timings to best manage the flow of traffic. The Department will provide a condition statement for execution after a formal Highway Occupancy Permit submission is received.*

Response: We concur that guide signing will be required as a result of the recommended changes. We will work with the Department during the plan review to ensure that satisfactory signs will be installed. This improvement project will result in a significant change to

the traffic patterns in the area, specifically the intersections of County Line Road/ Limekiln Pike, County Line Road/Lower State Road, Lower State Road/Limekiln Pike, and County Line Road/Kenas Road. We feel that this condition statement should be limited to these intersections and the relocation intersections of the leg of Limekiln Pike that are in the immediate vicinity of the site, as well as signing related to the roadway segments between these intersections.

Comment #2: *The lane utilization factors at County Line Road (S.R. 2038) & Lower State Road (S.R. 3003/ Limekiln Pike (S.R. 0152) must be updated to reflect the proposed lane configuration and anticipated distributions. Specifically, the two thru lanes on northbound Limekiln Pike (S.R. 0152)/Lower State Road (S.R. 3003) transition to a separate left-turn and thru lane after crossing County Line Road (S.R. 2038). While it is anticipated that the advanced signing will direct vehicles destined for the Limekiln Spur into the leftmost through lane, this doesn't appear to be reflected in the utilization factor. Similarly, the three thru lanes on westbound County Line Road (S.R. 2038) transition to two thru lanes and a separate right-turn lane immediately after crossing Limekiln Pike (S.R. 0152)/Lower State Road (S.R. 3003). The lane utilization factors for both of these approaches must be updated accordingly.*

Response: The lane utilization factors have been revised, and the revised analysis is provided in **Attachment A.** While some changes to the LOS have resulted from these changes, the intersection will operate at overall LOS D during all three peak hours under both future years, and the operation will continue to meet the Department's LOS criteria for both 2013 and 2020 conditions.

Comment #3: *The applicant must provide justification for several traffic adjustments depicted in the 2020 With Development Weekday Afternoon Commuter Peak condition. Specifically it appears that an adjustment is made to shift motorists traveling westbound on County Line Road (S.R. 3003) and using the existing Limekiln Pike to instead turn right onto Lower State Road (S.R. 2038) and then left onto the Limekiln Pike Spur. These adjustments can be found in the tables in Appendix L for the following movements: westbound right-turn at Limekiln Pike & County Line Road, westbound thru and westbound right-turn at Lower State Road & County Line Road, and the westbound left-turn at Limekiln Pike & Lower State Road.*

Response: Based on discussions with the Department and the Township's Traffic Engineers on July 20, 2010, we have modified the traffic adjustments for traveling westbound on County Line Road desiring to turn onto Limekiln Pike to the north. We have assumed the large majority of traffic desiring to make this movement will turn right from County Line Road at the existing Limekiln Pike alignment. A smaller portion has been shown turning right onto Lower State Road, then turning left onto the Spur Road. These revised diversion patterns are included in Attachment A of this letter. This change has been reflected in the analysis referred to in response to Comment #2.

Comment #4: *At the intersection of Lower State Road & County Line Road, the employee trip assignment for the eastbound left-turn movement must be updated to be 82 in the tables in Appendix K and L. The figures and analysis must be updated accordingly.*

Response: The eastbound left-turn movement volume has been revised and is reflected in the analysis associated with Comment # 2 of this letter. The adjustment of the volume has little effect on the overall operations of the intersection.

Comment #5: *The Figure 22 sketch included in the Traffic Impact Study shows a signal proposed at the intersection of the existing portion of Limekiln Pike and the Proposed Limekiln Pike Spur road. At a minimum, the applicant's access should be aligned with this intersection to eliminate the offset intersection design. Additionally, it appears that this intersection does not meet warrants for a signal based upon the provided analysis. At this time, the Department cannot commit to a new signal at this location until further information is provided; however, it appears that in order for the distribution of traffic to be effective a signal may be necessary at the location.*

Response: The applicant has requested a rezoning of the property on the north side of the spur roadway, opposite the expected intersection with the existing Limekiln Pike. If that rezoning is granted, we agree with PennDOT and desire that the site access be aligned to intersect directly opposite the existing Limekiln Pike approach. We believe that a signal will ultimately be warranted at this location, and if concurred by PennDOT that warrants are indeed satisfied, one will be installed as part of the project.

Comment #6: *Northbound S.R. 0152 beyond the Lower State Road signalized intersection is closed due to structural deficiencies associated with the existing historical bridge. A detour plan is implemented indefinitely for this location. The Traffic Impact Study must be revised to address this impact.*

Response: The bridge was fully open, without detour or restriction, at the time of the traffic count program in April of this year. The closure occurred after volumes were collected. We understand that the bridge is being rehabilitated and has been closed as a result of an inspection. Traffic Planning and Design is the designing engineer. Based on conversations with Matt Hickson, P.E., who is working on that project for TPD, the project has been placed on an expedited schedule, resulting in an anticipated let date of February 2011. With the expected construction time of five to six months, it is expected that the bridge will be fully opened by early 2012. As a result, the bridge is expected to be rehabilitated and opened prior to the opening of the Teva project and the anticipated completion of the associated roadway improvements.

Comment #7: *The traffic signals at County Line Road (S.R. 3003) & Kenas Road and County Line Road (S.R. 3003)/Limekiln Pike (S.R. 0152)/Lower State Road (S.R. 2038) are currently coordinated via time based coordination. At a minimum the applicant should provide fiber optic interconnect between the signals at County Line Road (SR. 3003) & Kenas Road, County Line Road (S.R. 3003) & Lower State Road (S.R. 2038) and Lower State Road (S.R. 2038) & Limekiln Pike*

Spur Road. The Department also supports the investigation of the effectiveness of an adaptive system at the Limekiln Pike and Kenas Road intersections with County Line Road due to the close spacing of these intersections.

Response: We agree that signal coordination is necessary to provide efficient traffic operation in this area. We will coordinate with the Department, as well as with the WD2 design team, to determine appropriate means of providing coordination of the signals in this immediate area. Given the expected acceptable operation of the intersections mentioned above and the overall level of improvements proposed in conjunction with this development, we do not believe an adaptive system is necessary in this area. However, we understand the Department's desire of such a technology, and it will need to be discussed and agreed upon with the applicant.

Comment #8: *It appears that a gate may be proposed for the employee driveway on the Limekiln Spur Road. The Department is concerned that queues may form at this gate and extend to the Limekiln Pike Spur especially during shift changes. The applicant must verify that there is sufficient spacing between the gate and the Limekiln Spur to accommodate the longest possible queue. It may be necessary to relocate the gate further into the applicant's site in order to safely maintain traffic on the State Route.*

Response: As with Teva's existing facility in Montgomery Township, a gate will be utilized at the employee entrance to the proposed facility from the Limekiln Spur. The location of this gate has not yet been determined, as the current access onto the relocation of Limekiln Pike has not yet been designed in the area proposed to be rezoned. The applicant will work with the Department to determine an appropriate location for this gate that will accommodate any potential queues and will not impede traffic on the Limekiln Pike Spur based on Teva's experience with the gate at the Horsham Road site. The gate will have automated access to allow free flow of incoming Teva employees, and possibly a second ingress lane adjacent to the security guard house for visitors. With this, we would expect very minimal queuing.

Comment #9: *At Lower State Road (S.R. 3003) & Pickertown Road, the Pickertown Road left-turn movement operates at LOS F with 191.5 and 369.0 seconds of delay in 2013 and 2020 Without Development conditions, respectively. Furthermore, under 2013 and 2020 With Development conditions, this movement operates at LOS F with increased delay compared to Without Development conditions. As such, the applicant should investigate the provision of protected/permitted phasing for this movement to decrease delay.*

Response: As requested, we have analyzed the intersection of Pickertown Road and Lower State Road with a protected/permitted phase on the northbound Lower State Road left-turn movement. With the addition of this phase, the intersection would operate with increased delay both overall and on specific movements, particularly during the morning peak hour. This is due primarily to the existing delay on both the northbound approach and the eastbound approach under existing conditions. A comparison of the

LOS of the intersection with and without the protected/permitted phasing, as well as the detailed analysis worksheets, is provided in **Attachment B.** It should be noted that the overall peak hour delay increase at this intersection as a result of the Teva project is 3.8 seconds, and is not expected to have a sizeable impact on the operation of this intersection. It should also be noted that the maximum queue lengths are expected to increase by less than one vehicle length on each movement of the intersection during each of the three peak hours under both 2013 and 2020 conditions. On most movements, the actual increase is projected to be less than ten feet for each movement. As a result, we believe it is clear that the impact of the development at this intersection will be minimal and will be far offset by the significant improvements already proposed in conjunction with the proposed development at the triangle intersection of County Line Road/Lower State Road and Limekiln Pike.

However, as requested, we did evaluate potential improvements to the intersection. There appears to be adequate right-of-way available to construct either separate left-turn lanes on both Pickertown Road approaches, or a separate right-turn lane on eastbound Pickertown Road. Both options will provide improved service but with continued delay on some approaches during the morning peak hour. It should be noted that any improvements at this intersection will decrease the monies available by the developer for improvements to the triangle area.

Comment #10: *The traffic study includes expected traffic diversions from the Route 202 Parkway that are illustrated in Appendix H. As such, the applicant must provide relevant figures and data from the Delaware Valley Regional Planning Commission's (DVRPC) report US Route 202 Section 700 – Traffic Study to justify the identified diversions.*

Response: The relevant data and figures from the DVRPC report are provided in **Attachment C.** This information should detail the basis of our diversion assumptions.

Comment #11: *The trip distribution for the employee access assumes that 51% of the exiting vehicles (destined to points east of Limekiln Pike on County Line Road) will turn left out of the main access, then turn right on Lower State Road and then right onto County Line. It appears that a more direct route would be for most of this 51% to utilize the existing leg of Limekiln Pike. Revise accordingly.*

Response: The distribution has been revised per the comment. The analysis for the intersections of County Line Road and Limekiln Pike, and Limekiln Pike and Limekiln Spur is provided in **Attachment D.** The analysis results remain similar to that in the original report, with no further need for mitigation measures.

Comment #12: *At the intersection of Limekiln Pike (S.R. 0152) & Lower State Road (S.R. 3003), there is a discrepancy between the volumes shown on the manual turning movement count sheets and the volume spreadsheets, figures and analysis. The applicant should clarify the discrepancy and update the study accordingly.*

Response: After reviewing the original counts at this intersection for the weekday afternoon peak period, it was clear that the traffic volumes did not correspond with traffic volumes at the adjacent intersection. The exact cause of this is not clear. As a result, we recounted the intersection during this time period, and the volumes and turning movements matched up much better with the adjacent intersections. Although the traffic volumes from that updated count were utilized in the traffic analysis, the updated traffic count was inadvertently forgotten to be included in the appendix of the original traffic study. The updated manual turning movement traffic count is provided as **Attachment E** of this letter.

Comment #13: The study analyses 2013 as the opening year of the development and indicates that full occupancy is not anticipated until 2015. PennDOT's Traffic Impact Study Guidelines indicate that the opening year analysis "should be assumed to be last phase of construction." As such, the study should be updated such that the opening analysis year is 2015.

Response: When the project was originally scoped with PennDOT, it was expected that Teva would open with a clear and distinct phasing program with a certain level of operation at day one in 2013 and full operation phased in expected shortly thereafter, likely by 2015. As a result, it was anticipated that three analysis years would be included in the study, 2013 for the Phase 1 development, 2015 for the full build, and 2020 for five years after full build. At this point, it is unclear exactly how much of the operation will be in place at project opening and exactly when full occupancy is expected, although it will still be phased in between opening year (2013) and full occupancy (2015). As a result, for analysis purposes, it was conservatively assumed that full occupancy and operations would occur at opening, 2013. It has also been stated that Teva would agree to construct the roadway improvement program by the opening. As a result, we do not believe analysis of 2015 conditions is needed. We believe the provided 2013 and 2020 analysis, which both assume full build conditions, give an adequate depiction of future operating conditions both without and with the development and the significant roadway improvement program. We respectfully request that the Department not require an analysis which will not produce any different recommendation results, but would only show 2013 to operate somewhat better with less development traffic.

Comment #14: The lane utilization factor for the eastbound County Line Road approach at the intersection of County Line Road (S.R. 3003) & Kenas Road (S.R. 2014) must be adjusted to account for the length (approximately 200 feet) of the second thru lane.

Response: The additional through lane at this intersection is carried along County Line Road through its intersection with Lower State Road. We feel there is adequate room, approximately 2,000 feet, for vehicles to maneuver between lanes after the intersection of County Line Road and Kenas Road; therefore, the default lane utilization factor determined by Synchro should be considered adequate. Furthermore, the actual, full depth pavement width where two eastbound through lanes can be provided without

widening is longer than the 200 feet striped in this area, actually exceeding 600 feet in this area. We suggest that as much length approaching Kenas Road on County Line Road be striped for the through lane as possible.

Comment #15: *At the intersection of County Line Road (S.R. 2038) & Kenas Road (S.R. 2014) the westbound thru movement queue is significantly longer in 2013 With Development conditions compared to without development conditions. It appears that the cycle length utilized in With Development conditions may be contributing to the significant increases in queue length. As such, the applicant should consider revising the cycle length to reduce queuing at the intersection.*

Response: The signal cycle length was revised as suggested in order to improve the level of service at this intersection. With the cycle length used in the study, the expected queue can be accommodated and will not interfere with the adjacent intersections. The resulting analysis, along with summary LOS and queue matrix tables, are provided in **Attachment F** of this letter.

Comment #16: *The available storage for each lane must be added to the queue tables to demonstrate if adequate storage is available for each intersection.*

Response: The available storage for each lane has been added to the queue tables, and the updated queue tables are provided in **Attachment G.** All auxiliary lane queues are being designed, as necessary, to fit within their storage at the study intersections within the vicinity of the proposed improvements, as well as queues between these intersections. At the study intersections that are farther away from the site, the with-development queues will be similar to the without-development queues.

Comment #17: *Provide figures in appendix showing diversions for proposed improvements (2013 and 2020) as well as the WD2 improvements (2020).*

Response: Figures showing the diversions for the proposed improvements (2013 and 2020), as well as the WD2 improvements (2020), are provided in **Attachment H.**

Comment #18: *The proposed design includes the construction of a Proposed Limekiln Spur Road. At this time it is unclear whether the Department would accept the Right-of-Way associated with this roadway and/or if the Right-of-Way for the existing portion of Limekiln Pike would be retained or returned to the Township. Additional discussions between the applicant, Department and Township must be conducted to determine the future responsibilities of these roadways. The applicant will be required to prepare Right-of-Way documents pertaining to these potential dedications and/or turn-backed portions pending further discussions.*

Response: Will comply.

Comment #19: *The PennDOT project number, B10-005, for this preliminary review must be written in red in the "Description" section on the HOP application when the formal HOP application is submitted.*

Response: Will comply.

We trust that we have adequately addressed the issues raised in the Department's June 24, 2010 review letter of the project Traffic Impact Study. Should the Department have any additional concerns, we look forward to working with the Department to get them resolved and moving the project forward.

Sincerely,

Casey A. Moore, P.E.
Vice President & Regional Manager – Mid Atlantic

KDO/BMJ/lbk

cc: Jeremy Chrzan, P.E., Pennoni Associates
Coert Davis, Teva Pharmaceuticals
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