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August 19, 2019

Chris Miller, Zoning Officer
Camp Hill Borough
2145 Walnut Street
Camp Hill, PA 17331

RE: Transportation Impact Study (TIS)
Study Date: July 30, 2019
Preliminary / Final LDP
3115-3133 Chestnut Street – Chick-fil-A Restaurant

Dear Mr. Miller:

Our office has reviewed the above referenced Transportation Impact Study (TIS) and associated response to comments letter dated August 5, 2019, as provided in support of the subject land development proposal and prepared by Traffic Planning and Design, Inc. (TPD),, consisting of the demolition of existing residential structures and the construction of a 5,000 sf Chick-fil-A restaurant with associated parking and connecting roadways. The site is located at the intersection of South 32nd Street and Chestnut Street. From our technical review of the study we offer the following comments for the Borough's consideration;

Comments Letter Dated March 12, 2019

1. *For the intersection of Chestnut Street and 32nd Street the Synchro analysis incorrectly modeled the northbound and southbound left turns. The Synchro output shows protected/permitted phasing but the phases are currently protected only. This must be modified in the Synchro inputs and reevaluated. The following comments may still apply but analysis output will change once the phasing is corrected:*
 - a. *Level of Service (LOS) requirements are met per PennDOT Pub 282 Policies and Procedures for Transportation Impact Studies; however, the publication also notes that "The Department may request the applicant to mitigate critical movements or approaches and perform additional analysis". The northbound approach to the intersection drops from a LOS C to LOS D. Therefore, mitigation should be considered, possibly consisting of adding a northbound right-turn lane to improve the operation of the northbound approach, or reassignment of the lane configurations on the eastbound and westbound approaches to provide double left-turn lanes to improve overall intersection operation.*

Not adequately addressed. The left-turn phase for the intersection of Chestnut Street and 32nd Street was modeled correctly in the resubmission. However, there are still critical movements that show significant delay increases and one with a LOS drop between the base and projected year as follows (Table 9 in report):

- i) AM Westbound Thru/Right delay increases from 89.3 seconds to 107.3 seconds
- ii) Midday Northbound Left delay increases from 79.8 seconds to 102.5 seconds
- iii) PM Eastbound Thru delay increases from 60.7 seconds to 112.6 seconds
- iv) PM Southbound Left delay increases from 59.4 seconds to 87.5 seconds, LOS drops from E to F
- v) Saturday Eastbound Left delay increases from 92.5 sec to 106.2 sec
- vi) Saturday Northbound Left delay increases from 69.1 seconds to 84.2 seconds

Per PennDOT Publication 282, Appendix A Policies and Procedures for Transportation Impact Studies, the Department may request the applicant mitigate critical movements or approaches and perform additional analysis.

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- b. *There is an all pedestrian phase at this location which does not appear to have been modeled. The pedestrian phase is actuated on a routine basis at this intersection significantly impacting intersection operations.*

Adequately addressed.

- c. *Estimated queues in the Synchro output appear to be less than what intersection observations indicate. Per PennDOT Publication 46 Traffic Engineering Manual, queues should be documented at the end of each 15-minute period. Many of the Synchro output 95th percentile queues are reported with a '#' symbol which means that the volume modeled exceeds capacity. The 95th may still be valid if the v/c ratio is less than 1.0 but for the Saturday midday peak period it is not. The study should have included measured queues for each 15 minutes of the count periods. Publication 46 discusses counted volume versus actual demand.*

Not adequately addressed. The response indicates that just prior to each peak 1-hour analysis period the highest number of queued vehicles observed was one vehicle for the eastbound left movement during the Weekday AM, Weekday PM, and Saturday Midday periods and none for all other movements. This does not seem realistic as vehicles on several approaches to the intersection must typically wait through more than one signal cycle to clear the intersection during peak periods. While it is understood that there are software limitations to evaluating initial queue, one possible way to address this is to add the initial queue to the hourly volume to account for this latent demand.

2. *Please include the trip generation data obtained from the research conducted at similar facilities.*

Adequately addressed. However, see Comment 11(c) below.

3. *Signs at the alleys stating NO THRU TRAFFIC will likely not be obeyed and this restriction would be difficult to enforce. Physical constraints (i.e. curbing) should be considered to prevent thru traffic.*

Not adequately addressed. This will be difficult to enforce, and patrons will likely utilize the alley, especially when left-turn movements out of the access are restricted during peak periods.

4. *Submit Autoturn simulations for the Chestnut Street right turn into the access as this radius is shown as only 20 feet.*

Adequately addressed. However, deliveries must be restricted to non-peak times as a large wheel-base vehicle will require the entire driveway (both inbound and outbound lanes) to enter/exit the site.

5. *A left turn restriction is proposed for the AM and PM weekday peak periods as well as the Saturday midday peak period. Based on the transaction data provided in the study, this restriction should also be applied during the weekday midday peak period. However, this will be accomplished through signing only and will be difficult to enforce on daily basis, so other measures should be considered.*

Adequately addressed. However, see Comment 19 below.

6. *The study addresses pedestrian concerns by recommending raised crosswalks along Chestnut Street at 27th, 28th, and 31st Streets. At 30th Street a raised intersection is recommended. This is an improvement that will result in increased safety for pedestrians/school children walking along Chestnut Street. A raised crosswalk should also be considered along Chestnut Street at the site access driveway.*

Adequately addressed. However, this improvement is not included on Page ii of the report.

7. *Perpendicular parking spaces are proposed along the site access driveway. While it is understood that these spaces will likely be used by employees with a lower turnover rate, they should be removed because of the conflicts that will result between parking maneuvers and inbound traffic (SALDO Article V Section 502.5.C).*

Not adequately addressed. Perpendicular parking spaces are still proposed along the site access driveway. Although 6 of the 11 spaces will likely be used by employees with a lower turnover rate, they should all be removed because of the conflicts that will result between parking maneuvers and traffic flow on the site access road.

- a) According to PennDOT Publication 282, Highway Occupancy Permit Operations Manual, the proposed access would be classified as a medium-volume driveway. Accordingly, the desirable driveway throat length that

should be free of conflicting traffic (parked vehicles included) is 125 feet. Additionally, per the Institute of Transportation Engineers (ITE) Transportation and Land Development publication, the minimum throat length should be a minimum of 75 feet. The Chick-Fil-A site plan only provides a throat length of approximately 37 feet.

b) There is a safety concern related to the anticipated parking maneuvers. When exiting the spaces drivers will back across both inbound and outbound lanes, blocking traffic during busy periods. This may result in a queue spilling out onto Chestnut Street.

c) The response notes that, “these parking spaces **will likely** be used by employees” but not all are designated on the plan as being for employees. Also, if these parking spaces are designated for employees only how will this be done? Through signing? How will it be enforced? The Site Plan does not show any signing related to this.

8. *There is a negative offset with the Select Medical driveway opposite the proposed access driveway. Eastbound and westbound left-turning vehicles will overlap and block each other, or potentially force one another into opposing lanes of traffic. The approaches should align (SALDO Article V Section 502.5.C).*

Not adequately addressed. The negative offset remains. As previously stated, eastbound and westbound left-turning vehicles will overlap and block each other, or potentially force one another into opposing lanes of traffic. While the response is that most of the left-turn traffic into Select Medical is during the AM when Chick-Fil-A volumes are lowest, this undesirable condition can result with minimal traffic volumes.

9. *The site driveway STOP sign should be 30”x30” since it is on a multilane approach.*

Adequately addressed.

10. *Were pedestrian counts conducted during the peak periods at any of the study intersections? Synchro output shows either a zero volume of conflicting pedestrians or does not include the information.*

Adequately addressed.

11. *On page 17 of the report relative to drive-thru queues it is stated, “it is our opinion that adequate storage length for the Chick-Fil-A is available for typically normalized time periods”. There are several concerns with the analysis assumptions:*

a. *The report states two 220-foot lanes (5 vehicles each) are provided. It should state two 110-foot lanes for 220 feet of total storage are provided. Each 110-foot lane would accommodate 4 vehicles, not 5 vehicles (based on a standard of 25 feet per vehicle). Therefore, the total storage for the drive-thru would be 14 vehicles (6 vehicles from the pick-up window to menu boards and 8 vehicles from the menu boards to the entrance road).*

Not adequately addressed. While the report now correctly states two 110-foot lanes are provided, the comment regarding 110 feet of storage only accommodating 4 vehicles versus 5 was not addressed.

b. *With a 95th percentile queue of 12 vehicles and available storage for 14 vehicles, there is only enough storage for an additional 2 vehicles. The concern is that for the 5% of the time that the intersection becomes blocked, the walk-in customers would also become blocked. If this happens, how quickly would vehicles queue onto Chestnut Street?*

Not adequately addressed. The response is that the 95th percentile analysis is an industry standard. While we agree with this statement, the concern is over what happens if this is exceeded and also that the calculation is based on a conservative assumption (see Comment 11(c) below).

c. *Based on the data provided for the three other Chick-Fil-A locations, the weekday midday peak transactions are the highest at two locations; therefore, queuing should also be evaluated at the drive-thru for the midday weekday period.*

Not adequately addressed. Although Saturday midday transactions have been represented as the same as weekday midday, this is because an average rate was used for the existing sites evaluated. The Lincoln Highway location has much lower rates than the other two sites (16.8 trips/hour vs 24.5 and 21.6), bringing the average down. If a worst-

case scenario is evaluated (Lindle Road weekday midday rate of 24.5 trips/hour), this would result in a queue at the proposed Camp Hill site of 17 vehicles which would block the internal intersection.

- d. *In Appendix K the drive thru counts evaluated three scenarios to identify a processing rate, or dwell time. The lowest dwell time (33 seconds) was used to calculate the anticipated queues for the subject property. How can it be assumed that for the duration of the peak periods vehicles will be processed at the highest rate? It would seem more reasonable to use an average between these three processing scenarios.*

Not adequately addressed. Response is that the Chik-Fil-A operator will implement the necessary measures to minimize vehicle queue, but how will this be guaranteed?

12. *Figures 10-12 illustrate the following traffic diversions that result from the proposed left-turn restriction at the site access driveway:*

Eastbound left-turn at Chestnut Street/30th Street: AM - 19 vehicles, PM – 56 vehicles, Saturday – 88 vehicles

Southbound thru movement at 31st Street/Bramar Road: AM – 11 vehicles, PM – 38 vehicles, Saturday – 57 vehicles

There is no indication in the study as to the impacts these diverted trips may have on additional intersections. It is assumed that these vehicles will be added to the intersections of Market Street/30th Street and 32nd Street/Harvard Avenue based on anticipated ultimate destinations. Therefore, these intersections should also be considered as part of the study.

Adequately addressed.

13. *A crash analysis was not provided in the report as requested.*

Adequately addressed.

14. *It was requested that the pedestrian study currently being conducted by the Tri-County Planning Commission be considered as part of this study. This was not included in the report.*

Adequately addressed.

15. *PennDOT and the County have both requested a copy of the TIS and are currently reviewing the study.*

Comments regarding revised plans

1. In Table 13, the Chestnut/Trindle & 32nd Street SB left-turn queue for 2020 Base Conditions scenario is minimal at 1-2 vehicles for all peak hours. During the weekday midday, weekday PM, and Saturday midday peak hours for the 2020 Projected With Improvements scenario the queues are between 167 and 255 feet, significantly above the available storage length of 110 feet. After the table it is stated, “2020 Projected Condition queues will largely be accommodated within the projected storage length or are comparable to the base (no-build) conditions”. This is not the case.
2. Concern over drive-thru queueing remains. It is noted that the access road is available for queueing. If this is the case the applicant is essentially saying that it is acceptable for queued vehicles to block access to the parking area, which would result in additional queueing.
3. At the internal intersection, for improved flow and to reduce potential for queueing to Chestnut Street, consider removal of the STOP sign. The eastbound and westbound approach stop signs would then require the placards TRAFFIC FROM RIGHT (LEFT) DOES NOT STOP.
4. The signs proposed at the crosswalks before and after the menu boards are not standard signs (not present in the Federal Highway Administration’s Manual on Uniform Traffic Control Devices (MUTCD) or PennDOT Publication 212 Official Traffic Control Devices). At marked crosswalks the standard MUTCD Pedestrian Crossing sign (W11-2) should instead be used, including the supplemental Downward Diagonal Arrow plaque (W16-7p).

- a. Consider removing the crosswalk before the menu boards. It is only to serve parking spaces that should be removed. Even if these spaces were to stay, the pedestrian crossing after the menu board could be used since it is a short distance away.
5. With the left-turn restriction at the site access driveway during peak hours, how will drivers know to not use the left-turn lane? Congestion/confusion may result when a driver approaches Chestnut Street only to find that he cannot turn left and is then trapped in the left-turn lane. An approach should be offered to prevent this situation.
6. According to the Camp Hill Borough Subdivision and Land Development Ordinance Section 502.1.B., "Streets shall be laid out to preserve the integrity of their design. Local access streets shall be laid out to discourage their use by through traffic". With the turn restrictions at the site access driveway, drivers leaving the site are forced to use 31st Street and other residential streets that are not designed to accommodate through traffic.

If there are any questions, or if we can help to clarify any aspect of this letter, please feel free to contact me at our Camp Hill office or via email at mmetil@gfnet.com.

Respectfully submitted,

GANNETT FLEMING, INC.



MARK METIL, PTOE, P.E.*

Director of Transportation
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**Registered in PA*

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