

April 20, 2021

Board of Adjustment
Township of Mahwah
475 Corporate Drive
Mahwah, NJ 07430

ATTN: Angela Dragone, Board of Adjustment Clerk

RE: Responses Boswell Engineering Traffic Engineering
Review dated 3/30/2021
149 Franklin Turnpike
Block 70.02, Lot 121
Township of Mahwah
Bergen County, NJ
Docket No. 1484-20

Dear Members of the Board:

The following is a point-by-point response to the referenced Traffic Engineering Review comments. Note that the response numbers follow the corresponding comment bullet points of each page

Traffic Report

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1. The gross floor area of the proposed Dunkin Donuts building is 1,800 SF as compared to 1,787 SF in the Traffic Impact Study. The difference in trip generation of 13 SF is negligible and has no bearing on the results of the Traffic Impact Study, although the discrepancy is duly noted.
2. Weekday peak hours (“rush hours”) are typically the highest weekly volumes of adjacent street traffic and the most critical time period studied for a proper traffic impact assessment. An automobile gasoline fuel service station and a coffee/donut shop with drive-thru have a very high pass-by volume component, and can be assumed to peak during the same peak hours of the adjacent street traffic. In other words, the peak hour of these land uses is coincidental with the weekday peak hour of the adjacent street. In this case, the new land use added to the site is the coffee/donut shop and thus, the primary subject of the impact assessment. The ITE weekday morning peak hour for the coffee/donut shop is more than double that of the weekday afternoon peak hour, and therefore will have more potential impact during the morning peak hour. This is typically not the case for weekends when the peak hour of the coffee/donut shop (morning) is not coincidental with the peak hour of the adjacent street network (midday/afternoons). Although, the ITE reports that the Saturday peak hour trip generation of the coffee/donut shop approximates the weekday morning peak hour trip

generation, it can be expected to be non-coincidental with the roadway. However, while roadway impacts on weekends are deemed not as critical, the operations of the site due to the Dunkin Donuts is (parking, queuing, etc.) and is assessed in the Site Plan section of the Traffic Impact Study.

For the above reasons, the traffic impact assessment was concentrated on the weekday peak hours, and particularly during the weekday AM peak hour when the Coffee/donut shop is at its peak, however, the site analysis is addressed in the content of the Traffic Impact Study.

3. The Shell automobile fuel station with a Dunkin Donuts with drive-thru located at 657 Franklin Turnpike has close similarities to the subject proposed Delta automobile fuel station with Dunkin Donuts with drive-thru:
 - It is located on and has direct access along the same roadway, i.e., Franklin Turnpike, but also on the Route 17 in Bergen County
 - It has the same number of 8 fueling positions
 - The Dunkin Donuts building is also 1,800 SF in size.

The collection of data at the Ridgewood station was for purposes of determining trip purposes;

- Fuel only
- Fuel & Dunkin' (walk-in)
- Fuel & Dunkin' (drive-thru)
- Dunkin' only (walk-in)
- Dunkin' only (drive-thru)

The percentages are included in Table IV of the Traffic Impact Study.

New Jersey is the one of two States where fuel must be pumped by an attendant only. This gives the opportunity for a customer to walk into the store while being refueled. These 5 minute or so simultaneous transactions are compatible with one another. It is noted that the distance between the nearest fueling position and the store at the existing Ridgewood site is 120', whereas, at the proposed Mahwah site it is less than half that distance, and much more convenient and attractive to walk to from the fueling positions. The interaction between the fueling positions and the store can be expected to be greater at the Mahwah site, reducing parking space and drive-thru activity. However, no adjustment was made for this factor.

4. The consultation with the Applicant included verification that the morning peak hour was the busiest and most critical time period for a Dunkin Donuts, and determining the magnitude of transaction data at the existing Dunkin Donuts (the one just north of the site on Franklin Turnpike). Since the pass-by component of the Dunkin Donuts is high, the directional distribution of the site traffic will closely approximate the distribution of existing roadway volumes. Assuming the peak hour of the Dunkin Donuts is coincidental with the peak hour of the roadway is the most conservative (and likely the most accurate) assumption, and was used for the analyses. Other times during the day, other than the morning "coffee-time" will exhibit lower trip generation.
5. The weekday morning peak hour was 40% lower and afternoon peak hour was 45% lower during the pandemic than pre-pandemic. These factors are included on page 4 of the Traffic Impact Study.

6. We have found that the most accurate means to “normalize” current traffic counts during the Covid-19 pandemic is by comparisons to pre-Pandemic volumes. In their July 2020 publication “*What a Transportation Professional Needs to Know about Counts during a Pandemic*” ITE reports that there was an immediate Pandemic-related 40-60 percent reduction in volume. This is consistent with our findings by comparing the March 2020 counts to the 2015 Franklin Turnpike volumes. Applying the offset factor from 2015 to 2020, although simplistically straightforward in nature, is deemed to be an accurate means given the ability for this study to apply historic NJDOT growth rates to account for the gap in time between 2015 and 2020. It is also deemed conservative as many companies make permanent adjustments that allow for remote working arrangements. Other factors such as staggered in-office shifts, reduced consumer driving behavior, continued remote schooling, etc., that have been learned through the pandemic can be expected to continue into the future to some degree. The psychological effect of when employees, parents with schoolchildren, college students, shoppers, dine-ins, etc. feeling totally safe to resume their pre-Pandemic schedules and habits will likely take a long time, if they ever revert back. Given these factors, traffic volumes along Franklin Turnpike may not return back to the adjusted 2015 levels within the horizon time when the subject Dunkin Donuts would be expected to be in operation for design and analyses purposes. For the above reasons, the means to “normalize” the Pandemic traffic volumes in the Traffic Impact Study are deemed accurate and appropriate, if not conservative.
7. The Timing Directive was obtained from Bergen County and the actual signal timing and phasing was obtained in the field at the time the traffic counts were conducted. Both sources matched.
8. The condition of random arrival to the subject signalized intersection applies, but the unsignalized driveway intersections are subject to influences of vehicle platooning for those directional flows affected by the upstream signal. This influence was accounted for in the Synchro Version 11 analyses performed. The Synchro files will be provided to Boswell Engineering for their review.
9. Because New Jersey disallows the customer to pump their own fuel, the simultaneous transactions of a fuel and store purchases is very compatible with one another as it is a time-saving, one-stop shopping alternative for the New Jersey consumer. For several reasons there has been a propensity in the automobile fuel industry over the past decades to develop sites that combine fuel sales with convenience food sales. One of the main reasons is that the dual purchase is very compatible with one another. The current fuel-only customers are in essence captured-customers, when convenience food sales are added as an ancillary use, and they are strong candidates for purchasing of a store item(s) as they await the attendant to fuel their vehicle. There is a synergy between the fuel positions and the store. Our firm’s professionals have performed dozens of trip-purpose studies at fuel stations with ancillary sales, such as convenience food. The portion of customers that perform dual purchases is typically over ten (10) percent, of which the majority does so as the vehicle remains at the fueling position. This obviates that need to utilize a parking space or a drive-thru stacking space for the food portion of that transaction time. This dual purchase from the fueling position at the Ridgewood Dunkin’ Donuts was observed to be comprised of only 3% of the total customer transactions. This lower percentage can be attributed to the greater distance between the fueling positions and the store of 120’ whereas, less than one-half of that distance is the norm. It is the layout of the Ridgewood station that is attributed to the

increased distance. There is an additional double row of parking spaces between the fueling positions and the store. However, even with this factor, the 3% number of dual transactions from the fueling positions is conservatively utilized for the analyses of the subject proposed Mahwah site.

10. The Gas Station with Convenience Store land use was referred to only for purposes of checking pass-by volumes. NJDOT Land Use Code Y61 - Convenience store/Gas Station with drive-thru restaurant (<3000 SF) is a similar use and it was deemed prudent to refer to it. The pass-by percentages for these land uses and Coffee/Donut Shop with Drive-thru are coincidentally 63% and 66% for the weekday morning and afternoon peak hours, respectively. Our Traffic Impact Study conservatively uses 63% for both peak hours.

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11. & 12 These paragraphs are provided to describe the best means to produce base traffic counts that are adjusted to account for the influences of the Covid-19 pandemic:
 - a) Traffic counts of the roadway intersection of Franklin Turnpike and Stephens Lane and the Delta station driveways were first taken on March 24, 2020, just as the Covid-19 pandemic started when its effects on traffic volumes were at their greatest.
 - b) These 2020 volumes were adjusted based on July, 2015 ATR counts of Franklin Turnpike just south of Lawrence Road.
 - c) These 2015 counts were first seasonally adjusted to account for summer season when they were collected.
 - d) These 2015 volumes were further adjusted by 1.5% per year for 5 years to account for the growth rate to 2020, and were used to represent existing roadway traffic volumes adjusted to normalize them for the pandemic conditions.
 - e) The factors of 2.57 and 2.21 for the AM and PM peak hours, respectively, were determined from the methodology described above and used to “normalize” the 2020 volumes. The full traffic data is provided in the Appendix B. For example, the total volume through the roadway intersection, as counted, during the AM peak hour in 2020 is 435. When taking all of the factors of the seasonal adjustment and growth rate of the 2015 volumes and applying the determined adjustment factor of 2.57, the total intersection volume is increased to 1123. These volume adjustments were made to all traffic movements.

Updated counts were taken almost a year later on March 18, 2021 of the same movements during the critical peak hour when the proposed coffee/donut shop experiences its highest trip generation. Its PM peak hour volumes are 1/3 of its AM peak hour volumes. While the roadway intersection exhibited an increase (as a result of traffic volumes normalizing), the station driveways remained approximately the same. For example, the total intersection volume during the AM peak hour increased from 435 in March, 2020 to 663 in March, 2021 (a factor of 1.52), yet the station driveway volumes increased from 33 to 39 during the AM peak hour; an increase of only 1.18. A day-to-day deviation of 18 points of fuel sales is typical and can be caused by many

factors including weather, traffic conditions, change in fuel price even by only pennies, etc. Based on ITE trip rates, the trip generation of the existing station is calculated to be 41 total AM peak hour trips. Therefore, March 2021 traffic volumes for the station activity is representative of the normal condition.

13. a) Local data is the most reliable source of trip generation projections. Further, it is only logical that the same customer base for the same type of store selling the same product line is relocated a short distance of only 0.15 miles away.

b) The trips were indeed added to the factored traffic volumes used in the analysis. Further, no credit was taken to reflect the removal of these trips that currently go through the intersection, to and from the existing Dunkin' Donuts.

c) NJDOT and ITE pass-by rates (one and the same numbers) were used in the analyses.
14. The purpose of the increased fueling positions is to more efficiently service existing fuel customers. Congestion and queuing occur from the existing gas pumps. The increased capacity and efficiency of fuel pumping will eliminate this current condition.
15. Will do on the Engineer's Site Plan.
16. Testimony shall be provided. If needed, heavy snow accumulations will be removed from the site to maintain full parking capacity and sufficient circulation/maneuverability.
17. Will be shown on the Engineering Site Plan.

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18. Spaces 1 and 2 will be used for employee parking, depending whether 1 or 2 employees will drive to the store. In this manner, the turnover and any possible conflict with stacked exiting vehicles is minimized. The distance between the end of the parking spaces to the fuel pump is 33.0 feet. Given a 9' wide fueling position, this provides a parking maneuvering aisle of 24' behind the parking spaces, sufficient for the parking maneuvers.
19. Will do.
20. Parking space #1 and possibly #2 will be designated for employees.
21. Parking space #1 and possibly #2 will be designated for employees.
22. The capacity analyses provided indicates sufficiency of left turns in and out. It is noted that the proposed conditions are greatly improved over existing by the elimination of the driveway closest to the roadway intersection, increased setback of the fueling positions, and the greater capacity of vehicle service by the doubling of fueling positions.
23. Deliveries of fuel and store products will occur during closed or off-peak hours. Testimony has and will be provided.

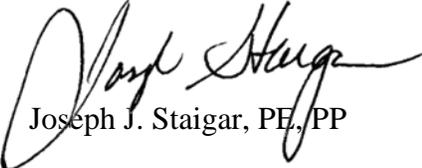
24. Same as Response 16 above. Truck delivery diagrams exhibits illustrating fuel truck delivery movements will be provided by the Site Engineer.
25. The Synchro analyses show the 95th percentile queue to be 85' along the Franklin Turnpike NB lane. The driveway exiting may be blocked at the very end of the red phase along Franklin Turnpike at times, for a matter of several seconds until the signal turns green and traffic proceeds. The access along Franklin Turnpike is certainly a much-improved condition over the existing configuration with two (2) driveways on Franklin Turnpike. The closest driveway to the intersection will be removed.

Although not mentioned in the Traffic Impact Study, but an important aspect to identify, is that the characteristic of the existing subject service station is that it experiences a much higher trip generation during the PM peak hour as opposed to the AM peak hour. The Dunkin' Donuts is a much higher trip generator during the morning as it is in the afternoon. Therefore, the dual uses are very compatible with one another from that aspect, in addition to the fact that many gasoline fuel customers will also be Dunkin' Donuts customers, performing a single trip for two (2) purposes, resulting in a more efficient traffic flow pattern to the surrounding roadway network.

I hope the above adequately responds to the comments and if there is any further information needed, it will gladly be provided.

Sincerely;

Dynamic Traffic, LL



Joseph J. Staigar, PE, PP