GOROVE / SLADE

1140 Connecticut Avenue NW
Suite 600
Washington, DC 20036
202.296.8625

TECHNICAL MEMORANDUM

To:	John Martinez	Chick-Fil-A, Inc.
	Mike Birkland	Bohler Engineering
	Travis D'Amico	Bohler Engineering
From:	Jim Watson, PTP	
	Erwin Andres, P.E.	
Date:	February 23, 2016	
Subject:	Van Ness Chick-Fil-A Transportation Review Summary	

INTRODUCTION

This memorandum presents a summary of a transportation review performed for the proposed re-occupancy and site improvements of an existing 3,134 s.f. Burger King fast food restaurant with drive-thru by Chick-Fil-A. The building will be nominally increased by 242 s.f. to 3,376 s.f. and will incorporate improvements to the existing access, ordering system/site operations, and circulation system currently serving the site. The site currently provides 8 parking spaces on-site and 15 spaces in a rear parking lot just west of the rear alley behind the building. Figure 1 shows the location of the existing subject site, rear parking lot and surrounding roadway network.

The subject site is located on the west side of Connecticut Avenue and served by an existing access and circulation system that consists of a one-way counter-clockwise loop around the existing fast food restaurant building with a separate entrance and exit along Connecticut Avenue. The re-occupancy of the site by Chick-Fil-A will be complemented by proposed site improvements that will be geared to facilitate improved traffic operations on-site. This memorandum outlines the implications associated with the proposed improvements on-site.

EXISTING CONDITIONS

Vehicular Site Access and Existing Roadway Network

Primary site access is provided along Connecticut Avenue with one curb cut allowing ingress to the site and another curb cut providing egress from the site. Yuma Street and Albemarle Street provides access to the site from both the east and the west. There is an existing public alley that runs north-south between Yuma Street and Albemarle Street that provides access to the parking spaces in the rear of the property. Access to the drive-thru lane serving the site can be accessed from the alley. These access and circulation elements are shown in Figures 2 and 3, which present site aerials of the front and rear of the subject property, respectively.

Local streets in the vicinity of the site include Albemarle Street, Yuma Street, and Windom Place. The DDOT local roadway classification for the year 2014 and the average annual daily traffic (AADT) volumes for the year 2013 have been identified for the relevant street segments surrounding the site.

<u>Connecticut Avenue</u>

Connecticut Avenue is a six lane principal arterial in the vicinity of the site with an AADT volume of 34,000. It connects Dupont Circle and downtown to the southeast to Maryland to the northwest. The posted speed limit is

30 miles per hour. Metered parking is available on both sides of Connecticut Avenue in the vicinity of the site, with no parking allowed between the hours of 7:00AM to 9:30AM and 4:00PM to 6:30PM Monday through Friday.

In the vicinity of the site, there are peak period reversible lanes; in the morning peak period, four lanes are used for southbound traffic and two for northbound and in the evening peak period, four lanes are used for northbound traffic and two for southbound.

Albemarle Street

Albemarle Street is a two lane collector with an AADT volume of 3,300 west of Connecticut Avenue and 4,400 east of Connecticut Avenue. Zoned Residential Permit Parking (RPP) is available on both sides of the street west of Connecticut Avenue and on the north side of the street east of Connecticut Avenue. The posted speed limit is 25 miles per hour.

Yuma Street

Yuma Street is a two lane local roadway. The eastern terminus of Yuma Street is Connecticut Avenue. Metered parking is available on both sides of Yuma Street in the vicinity of the site. The speed limit is 25 miles per hour.

Existing Site Conditions

The site is occupied by an existing Burger King building consisting of 3,134 s.f. The site is served by one driveway providing ingress from Connecticut Avenue and one driveway providing egress to Connecticut Avenue. There is also a driveway that allows egress from the site to the alley behind the building. Upon entering the site, the entrance driveway opens up to two lanes, with the left lane providing access to the drive-thru window located on the south side of the restaurant building and the right lane that bypasses the drive-thru lane to exit the site by accessing the rear public alley.

The existing queuing configuration for the drive-thru window allows for the on-site stacking of a maximum of 10 cars from the drive-thru window to the eastern property line. There is one menu board located on the west side of the building where orders are taken prior to patrons proceeding to the drive-thru pick-up window. There is room for 4 vehicles to stack from the drive-thru window to the menu board. There is room for 6 vehicles to stack from the menu board to the property lane.

In the rear of the property, there are currently 5 parking spaces that are accessed via the rear alley. Patrons who would access the parking spaces can either use the alley or can use the by-pass lane on-site to access the alley to get to those parking spaces. Additionally, there are 3 parking spaces located at the northwest corner of the building that can be accessed from the internal service drive.

Just west of the rear alley, there are 15 off-site parking spaces that are currently designated for Burger King patrons in a surface parking lot. These parking spaces supplement the 8 existing parking spaces on-site.

Figure 1
Site Location

Figure 2
Existing Site Aerial (Front)

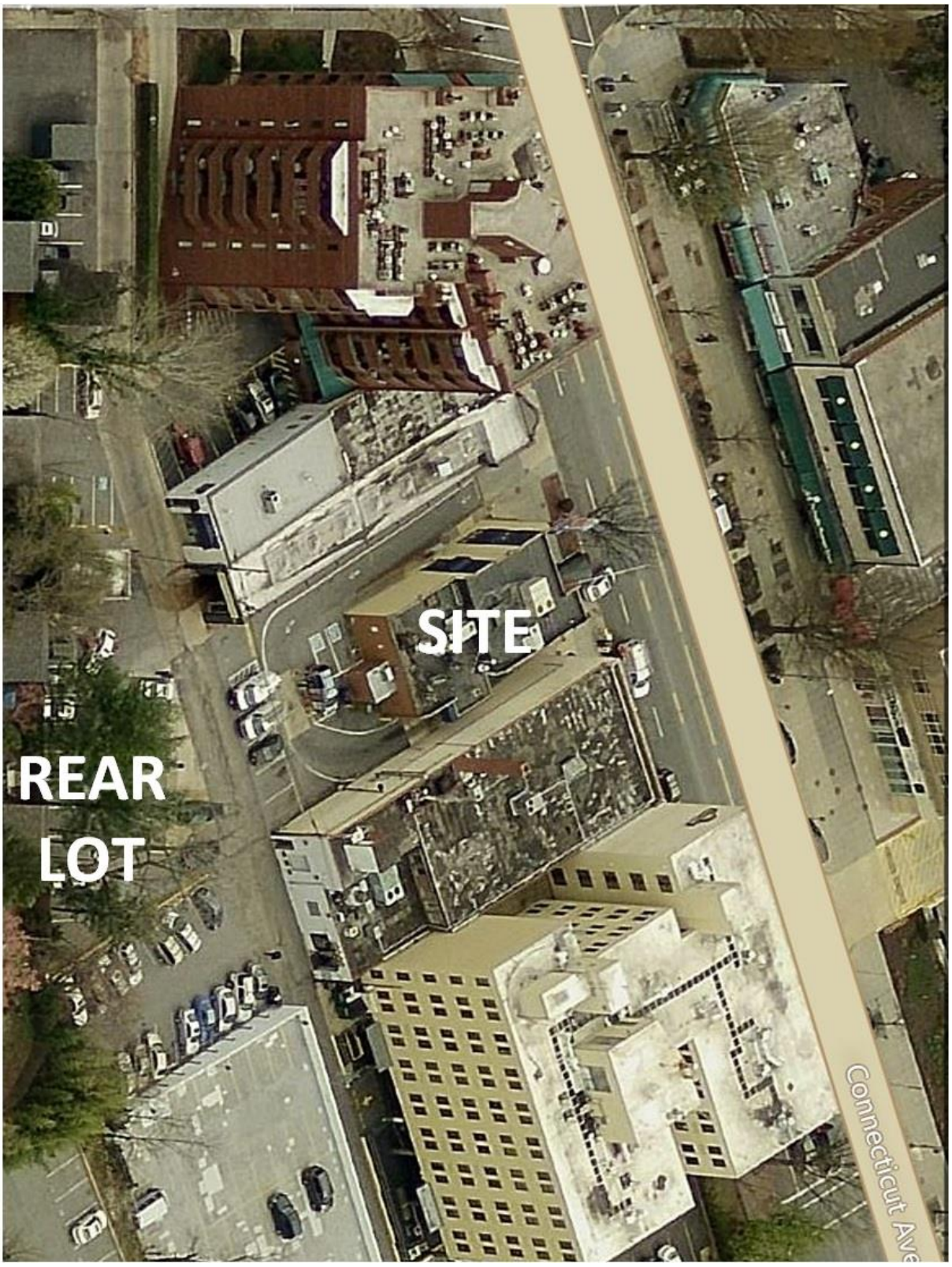

Figure 3
Existing Site Aerial (Rear)

FUTURE CONDITIONS

Proposed Site Conditions

The proposed re-occupancy of the site by Chick-Fil-A will include a nominal expansion of the existing building size of the 3,134 s.f**.** building by 242 s.f. to 3,376 s.f. Chick-Fil-A will maintain the drive-thru of the existing Burger King building and will improve on the existing conditions identified in the previous section along with enhancing the supporting operations. Figure 4 presents the detailed site plan that calls out the various improvements proposed for the site and the typical (ie, "non-overflow") queuing plan associated with those improvements.

In order to address potential impacts of the proposed re-occupancy of the site by Chick-Fil-A, the project has included significant improvements to the site that are geared to address the access and circulation elements of the site along with other site improvements such as sustainability and storm-water focused upgrades. These improvements include the following:

- The on-site queuing capacity potential has been maintained by providing the same circulation system that currently exists, with one drive-thru lane and one by-pass lane that provides direct access to the rear alley. As a result, the existing maximum stacking capacity of 10 vehicles will be maintained.
- The order-taking process has been streamlined and greatly augmented by providing one stacking drive-thru lane and allowing the 2nd lane for overflow that would be serviced exclusively by staff on-foot taking orders with mobile devices, as described in more detail below. The main ordering lane will accommodate an on-site stacking capacity of at least 5 vehicles prior to the fixed ordering point. Similarly, the overflow lane can also accommodate 5 vehicles on-site, if necessary. This configuration can effectively increase the ordering capacity by 100% and the total order process capacity by 50% on the main lot, with a maximum capacity condition (with the overflow lane) of 15 vehicles on-site. There is the ability to stack 5 vehicles between the menu board and the pick-up window. A Queue Management Plan (described further below) will be incorporated into the operations of the restaurant during peak hours throughout the day that will further unlock on-site queuing and overflow capacity.
- The on-site parking has been made more efficient while providing 8 parking spaces. The parking lot that provides 15 additional parking spaces at the rear of the building will be upgraded and more efficiently utilized.
- The trash enclosure serving the site has been moved from the west side of the alley behind the property to the southwest corner of the site, closer to the restaurant and farther away from residences to the west of the property. Locating the trash enclosure closer to the building allows for more efficient trash delivery from the restaurant to the enclosure and was also desired by the community during prior BZA-related discussions with the prior operator.
- Improved sidewalks, landscaping and streetscape elements are proposed. Additionally, an outdoor café is proposed which will enhance the pedestrian experience along Connecticut Avenue and allow for early adoption of elements of the Van Ness Main Streets guidelines.
- Permeable concrete pavement on-site is proposed to address stormwater drainage conditions where it is possible to locate.

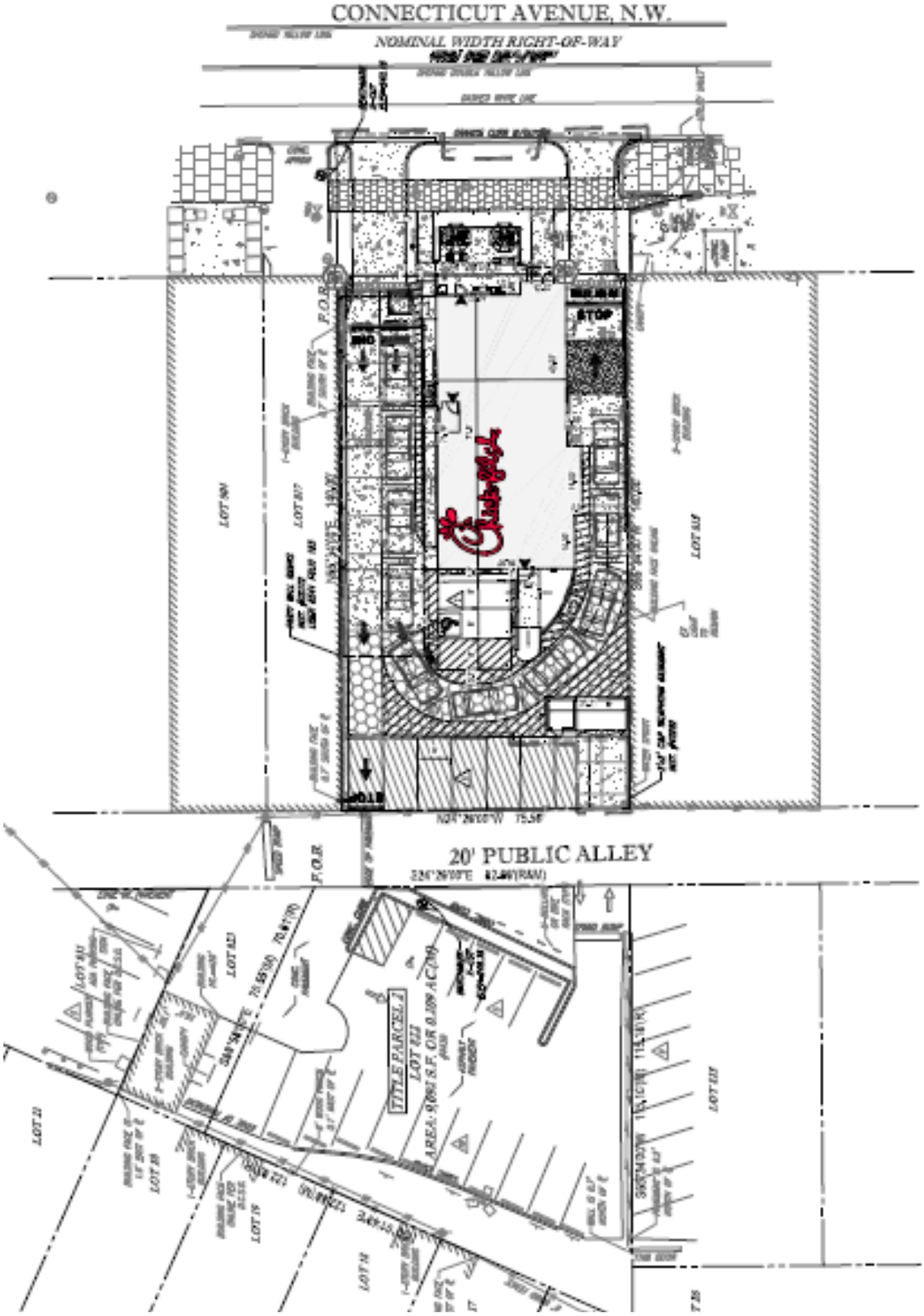

Figure 4
Detailed Site Plan

- Significant upgrades to the drive-thru exit are proposed. Chick-fil-A will install several means of mitigation at the exit including an additional stop sign, "stop" lettering striped on the surface of the driveway, a speed table between the last service location and the sidewalk, a lower-growth landscaped buffer to allow cars a wider field of vision upon exit, and no left-turn out signage.
- There is also an opportunity to incorporate detectable warning strips adjacent to the driveway along the sidewalk, if DDOT and the ANC are amenable to this proposed element.

These elements represent a significant upgrade of existing conditions for the same use in essentially the same-sized building. It is also important to note that these improvements could provide significant benefits to the existing conditions related to the existing fast food with drive-thru use. Improvements proposed along Connecticut Avenue that include upgraded sidewalks and the outdoor café will improve the pedestrian environment. The streetscape treatments provide a better clarification of where the inbound and outbound driveways are crossing the public space, along with making it more clear to car operators that they are coming into contact with pedestrian space.

Existing Traffic Volumes

The site is directly accessible from Connecticut Avenue to the east and a public alley to the west (rear of site). Site traffic observations and counts were collected along the public alley on a typical weekday (Wednesday, January 9, 2016) and a typical Saturday (January 9, 2016) during lunchtime and dinnertime peak periods. The peak hours for these observations consist of the following: 12:00 p.m. - 1:00 p.m. weekday lunch peak hour, 5:15 p.m. - 6:15 p.m. weekday dinner peak hour, and 2:00 p.m. - 3:00 p.m. Saturday lunch hour.

Three locations along the alley were selected to record traffic volumes on these days: at Yuma Street, at the rear site driveway, and at Albermarle Street. In addition to the public alley traffic counts, historical data from Thursday, March 8, 2012 is presented for traffic volumes along Connecticut Avenue at the intersections of Albermarle and Yuma Streets. These two intersection volumes present a typical weekday morning and evening peak hour of 8:00 a.m. - 9:00 a.m. for the weekday morning peak hour and 5:30 p.m. - 6:30 p.m. for weekday evening peak hour. The existing volumes at the five intersections are presented in Figure 5.

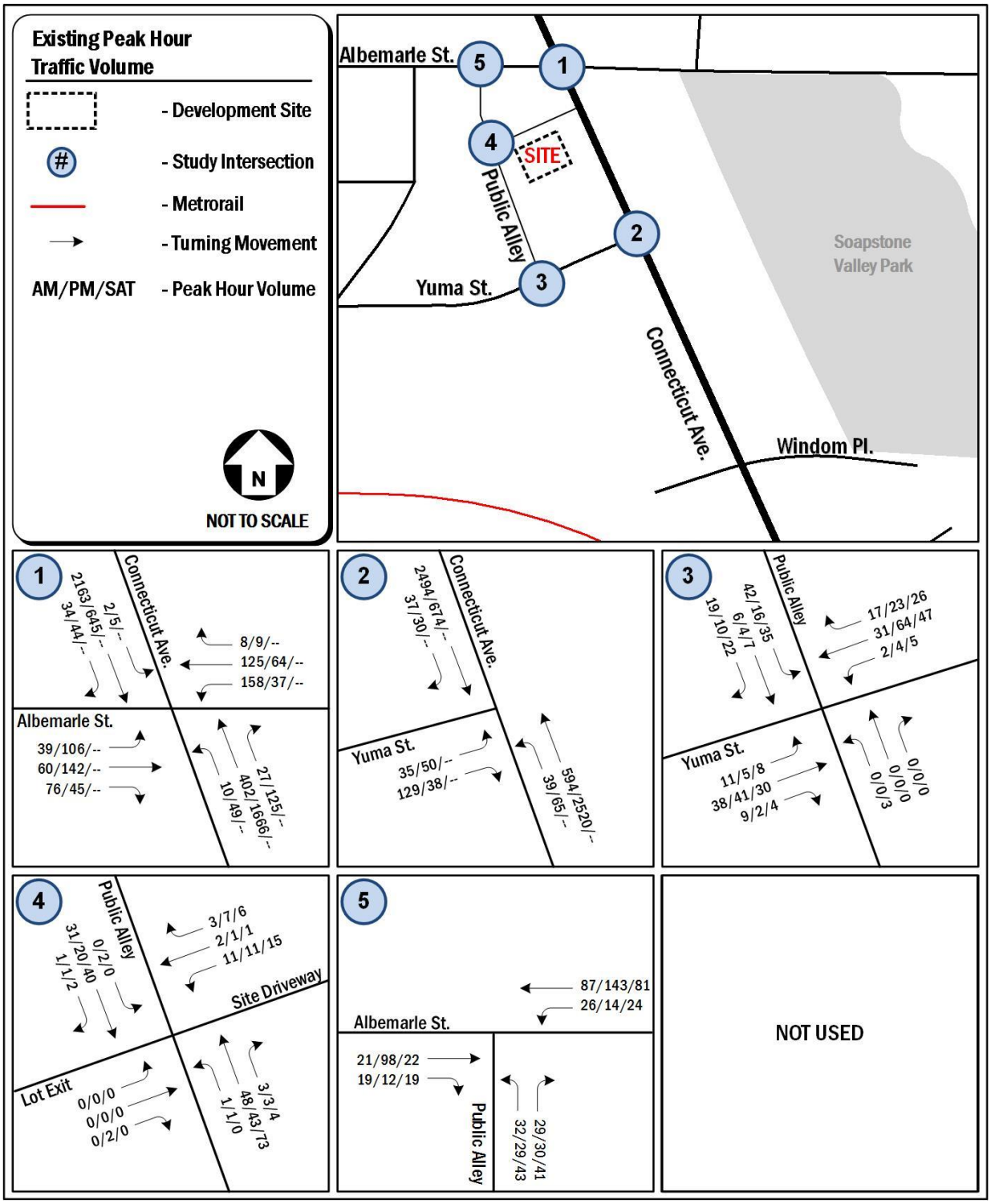

Figure 5
Existing Traffic Volumes

Traffic Implications of Proposed Re-Occupancy

As stated earlier, the site is occupied by an existing Burger King fast food restaurant building consisting of 3,134 s.f. The site traffic generation was observed on a typical weekday (Wednesday, January 6, 2016) and a typical Saturday (January 9, 2016) during the lunchtime and afternoon peak hours. There are many vehicles that exit the site using the by-pass lane to the rear alley, which accounts for the discrepancy between the inbound vehicles and outbound vehicles. Those vehicles could potentially include patrons choosing to park in the spaces accessed from the alley or the rear parking lot or residents using the by-pass lane as a cut-through option to access Albemarle or Yuma Streets.

The existing counts at the existing site driveways along Connecticut Avenue are presented in Table 1 below. As a matter of comparison, Table 2 shows the trips generated by the existing use if they were calculated using the *Trip Generation Manual, 9th edition* published by the Institute of Transportation Engineers (ITE).

Table 1
Existing Connecticut Avenue Driveway Counts

Time Period	Inbound	Outbound	Total
Weekday Midday (12:00 p.m. – 1:00 p.m.)	57	14	71
Weekday Evening (5:15 p.m. – 6:15 p.m.)	28	2	30
Saturday Midday (2:00 p.m. – 3:00 p.m.)	41	16	57

Table 2
Trip Generation for Existing Building based on ITE rates for 3,134 s.f. Fast-Food Restaurant with Drive-Thru

Time Period	Inbound	Outbound	Total
Weekday Midday (12:00 p.m. – 1:00 p.m.)	77	71	148
Weekday Evening (5:15 p.m. – 6:15 p.m.)	53	49	102
Saturday Midday (2:00 p.m. – 3:00 p.m.)	94	91	185

Comparing the trip generation of the existing restaurant to ITE projections, the existing restaurant does not generate as much as the ITE rates for several reasons that can include the hourly traffic adjacent to the restaurant, ease of access by non-vehicular means, and the restaurant offerings.

Table 3 presents the trip generation associated with the proposed increase of the restaurant building to 3,134 s.f. With the nominal increase in the size of the building to 3,376 s.f, the additional trips consist of an additional 6 inbound trips during the midday peak hour, an additional 4 inbound trips during the weekday afternoon peak hour, and an additional 7 inbound trips during the Saturday peak hour. These additional trips represent a minimal increase in traffic along Connecticut Avenue that currently carries approximately 3,400 vehicles during the peak hour. Given the type of use, ITE estimates that 50% of the trips generated by this use are pass-by trips, which are trips resulting from vehicles that are currently on the roadway network on Connecticut Avenue.

Table 3
Trip Generation for Proposed Building based on ITE rates for 3,376 s.f. Fast-Food Restaurant with Drive-Thru

Time Period	Inbound	Outbound	Total
Weekday Midday (12:00 p.m. – 1:00 p.m.)	83	77	160
Weekday Evening (5:15 p.m. – 6:15 p.m.)	57	53	110
Saturday Midday (2:00 p.m. – 3:00 p.m.)	101	98	199

As a point of comparison, drive-thru transaction data was reviewed for several existing Chick-Fil-A restaurants in the mid-Atlantic region. The drive-thru data for the following stores were reviewed and are presented in Table 4:

- Store #2177 Aramingo – 2301 East Butler Street, Philadelphia, PA (Single order station)
- Store #3236 Canton Crossing – 3809 Boston Street, Baltimore, MD (dual ordering stations)
- Store #2613 Cheltenham – 2421 West Cheltenham Avenue, Philadelphia, PA (single order station)
- Store #2608 District Heights – 5502 Silver Hill Road, District Heights, MD (dual ordering stations)
- Store #2774 Springfield In-Line w/ Drive Thru – 6681a Backlick Road, Springfield VA (Single order station)

These stores provide a range of different geographic locations throughout the mid-Atlantic region that provide either single or dual-ordering stations. The nearest of all of these locations is the District Heights location located just over one mile east of the District boundary along Pennsylvania Avenue.

The average inbound peak drive-thru arrivals range from 57 to 86 vehicles entering the drive-thru lanes during the lunchtime peak hour and 51 to 75 vehicles during the dinner peak hour. If this range of vehicles entering the existing drive-thru lanes at existing stores were applied to the subject site, the proposed operation with the multiple designated staff members taking multiple orders at the same time would accommodate this demand.

Assuming that the process of taking orders takes 2 minutes per vehicle, 3 staff members taking simultaneous orders would be able serve 90 vehicles in an hour and 4 staff members taking simultaneous orders would be able serve 120 vehicles in an hour. The proposed store would provide the necessary staff to meet the peak drive-thru demand. During non-peak times, outdoor staff members will not be required due to the fixed ordering point being able to handle the non-peak traffic. Staff members on site will be assigned to address any surges in car traffic during non-peak times that would exceed the one drive-thru lane queuing capacity.

Table 4

Drive-thru Inbound Count Data for Existing Chick-Fil-A Restaurants with Drive-Thru

	Drive-Thru Transaction Counts				
	Aramingo, PA	Canton Crossing, MD	Cheltenham, PA	District Heights, MD	Springfield, VA
Tuesday, 10/13/2015					
11:00 a.m. - 12:00 p.m.	46	47	56	81	65
12:00 p.m. - 1:00 p.m.	69	96	67	91	87
1:00 p.m. - 2:00 p.m.	68	84	71	89	89
4:00 pm. - 5:00 p.m.	45	44	57	73	70
5:00 p.m. - 6:00 p.m.	48	63	61	73	53
6:00 p.m. - 7:00 p.m.	53	64	59	79	60
7:00 p.m. - 8:00 p.m.	53	58	58	74	55
Thursday, 10/15/2015					
11:00 a.m. - 12:00 p.m.	44	62	63	69	73
12:00 p.m. - 1:00 p.m.	63	88	65	92	92
1:00 p.m. - 2:00 p.m.	59	87	67	84	102
4:00 pm. - 5:00 p.m.	60	55	61	76	66
5:00 p.m. - 6:00 p.m.	55	56	57	81	67
6:00 p.m. - 7:00 p.m.	55	63	55	73	71
7:00 p.m. - 8:00 p.m.	48	73	57	79	65
Tuesday, 11/10/2015					
11:00 a.m. - 12:00 p.m.	46	63	57	72	83
12:00 p.m. - 1:00 p.m.	58	111	66	95	91
1:00 p.m. - 2:00 p.m.	58	89	72	96	94
4:00 pm. - 5:00 p.m.	53	71	58	69	68
5:00 p.m. - 6:00 p.m.	36	69	57	70	63
6:00 p.m. - 7:00 p.m.	48	71	67	64	71
7:00 p.m. - 8:00 p.m.	51	67	64	80	75
Thursday, 11/12/2015					
11:00 a.m. - 12:00 p.m.	44	55	58	77	70
12:00 p.m. - 1:00 p.m.	63	91	71	96	81
1:00 p.m. - 2:00 p.m.	67	87	80	89	82
4:00 pm. - 5:00 p.m.	55	55	60	75	70
5:00 p.m. - 6:00 p.m.	59	73	60	78	57
6:00 p.m. - 7:00 p.m.	54	77	68	79	63
7:00 p.m. - 8:00 p.m.	43	60	56	77	58
Average Lunchtime	57	80	66	86	84
Average Dinner	51	64	60	75	65

QUEUE MANAGEMENT PLAN

The proposed improvements have been geared to address constraints with the existing site configuration. The improved queuing configuration provides two major benefits to the existing plan: increased ability to bring cars onto the site and off of the public space and more efficient processing. Having an overflow lane and restaurant staff taking orders with electronic devices exterior to the restaurant will facilitate customer processing times at a more efficient rate. The overflow lane will also help to ensure that potential overflow stacking is accommodated on site, as further explained below.

The following Queue Management Plan maximizes the various elements of the site plan geared to promote maximum on-site stacking and increased stacking:

- The proposed site plan provides one menu board and one pick-up window. There is stacking for 5 vehicles between the pick-up window and the menu board. There is stacking for 5 vehicles between the menu board to the property line at the site entrance driveway.
- The green roof that is proposed above the two entrance lanes will provide cover to patrons entering the site and waiting to place their order. The green roof also provides the opportunity for Chick-Fil-A employees to take orders and collect payments for patrons while being covered from the elements.
- During peak periods of customer activity, Chick-Fil-A staff members with mobile devices will be taking orders, as well as payments, to expedite the order processing of patrons arriving in the drive-thru lane.
- During peak periods of customer activity, Chick-Fil-A staff members will also have the opportunity to bring the orders out to the individual cars that have already placed their order. There is a door that will be installed adjacent to the drive-thru window that will allow Chick-Fil-A staff members to take the fulfilled food orders out to the drivers waiting in line.
- As identified earlier, there is a maximum stacking capacity of 5 vehicles from the order menu board to the property line at the entrance driveway. In the event that there are 5 vehicles stacked from the menu board to the property line, a Chick-Fil-A staff member stationed at the entrance will direct vehicles to the front of the by-pass lane. Once the redirected vehicle gets to the front of the by-pass lane, they will have two options:
    - These patrons can either choose to park in the spaces behind the building or in the restaurant's surface lot west of the alley and walk into the restaurant, or
    - Their order will be taken and they will be directed to either park in the spaces behind the building or will be directed to park in the Chick-Fil-A surface parking lot just west of the alley. The Chick-Fil-A staff would then take the fulfilled food orders to the patrons parked in these locations.
- As part of this plan, the Applicant will monitor the utilization of the drive-thru activity three months after the restaurant opens to identify maximum queues, frequency of maximum queues, and trip generation associated with the drive-thru window. This will be reviewed every 6 months for one year to review the effectiveness of the queue management plan and to determine if any adjustments to the plan need to be made. The operator will have a vested interested to minimize queuing because any long queuing resulting

from the drive-thru operations would only discourage patrons from entering the site. The operator's goals regarding reducing traffic impacts are aligned with the community's.

DISCUSSION OF ALTERNATIVE ACCESS OPTIONS

The proposed access and circulation plan takes advantage of an existing use that has been active in the community for decades as a drive-thru Burger King restaurant. The current access plan also takes advantage of the pass-by nature associated with drive-thru activity. Patrons heading north or south on Connecticut Avenue would see the restaurant, see the driveway and choose to access the site directly from Connecticut Avenue.

Alternatively, the team looked at other circulation options to determine if the site can be successful. Such options include ingress and egress from the same curb cut on Connecticut Avenue, ingress from a Connecticut Avenue curb cut and egress into alley, ingress from the alley and egress into Connecticut Avenue, and ingress and egress entirely from the alley.

Any option that removes the inbound access from Connecticut Avenue completely eliminates the ability to successfully accommodate drive-thru activity at this restaurant. Intuitively, if patrons heading north or south on Connecticut Avenue do not see the driveway along Connecticut Avenue, those potential patrons would assume that the store is an in-line store without a drive-thru window. Consequently, those potential drive-thru patrons would continue past the restaurant. Any removal of the ingress driveway from Connecticut Avenue would also reduce the ability to stack on-site by half, which could potentially impact the circulation in the alley behind the restaurant.

If the outbound driveway was removed, the ability to maximize the on-site stacking would also be reduced. The current plan takes advantage of using the entire periphery of the building to provide on-site stacking. Any plan to either remove the inbound driveway or the outbound driveway effectively reduces the on-site stacking capacity by half from ten vehicles to only five, which would increase the likelihood and frequency of stacking extending beyond the property line.

CONCLUSIONS

The proposed re-occupancy of the site by Chick-Fil-A will include a nominal expansion of the existing building size of the 3,134 s.f. building by 242 s.f. will have a minimal impact on the surrounding roadway network given the rates identified by ITE. Chick-Fil-A will maintain the drive-thru operations of the existing Burger King building and will improve on the existing conditions identified in the previous section.

The improved reconfiguration of the drive-thru lanes will provide an upgraded experience that will allow for increased ordering processing capacity on-site and more efficient customer processing with the potential for an overflow drive-thru lane. Improvements proposed along Connecticut Avenue that include upgraded sidewalks and the outdoor café will improve the pedestrian environment.

With the nominal increase in the size of the building to 3,376 s.f, the additional trips consist of an additional 6 inbound trips during the midday peak hour, an additional 4 inbound trips during the weekday afternoon peak hour, and an additional 7 inbound trips during the Saturday peak hour. These additional trips represent a minimal increase in traffic along Connecticut Avenue that currently carries approximately 3,400 vehicles during the peak hour. Given the type of use, ITE estimates that 50% of the trips generated by this use are bass-by trips, which are trips generated by vehicles that are currently on the roadway network on Connecticut Avenue.

Given the improved order processing associated with Chick-Fil-A, the implementation of the proposed Queue Management Plan takes advantage of the technology associated with taking food orders with mobile devices and the ability for Chick-Fil-A to bring out fulfilled food orders to customers waiting in line or waiting in the rear parking spaces or rear surface lot. Indeed it leverages the adjacent parking lot in a creative way to address a potential problem with queuing on site.

The average inbound peak drive-thru arrivals range from 57 to 86 vehicles entering the drive-thru lanes during the lunchtime peak period and 51 to 75 vehicles during the dinner peak period. If this range of vehicles entering the existing drive-thru lanes at existing stores were applied to the subject site, the proposed operation with the multiple designated staff members taking multiple orders at the same time would accommodate this demand.

Assuming that the process of taking orders takes 2 minutes per vehicle, 3 staff members taking simultaneous orders would be able serve 90 vehicles in an hour and 4 staff members taking simultaneous orders would be able serve 120 vehicles in an hour during peak times. The proposed store would provide the necessary staff to meet the peak drive-thru demand. During non-peak times, outdoor staff members will not be required due to the ordering point being able to handle the non-peak traffic.