

October 29, 2020

Mr. Ray Flake, P.E.
Civil Engineering Services
7705 Spicer Farm Lane
Fairview, TN 37062
Sent Via: ray@civilengineeringservices.net

**Re: Transportation Impact Letter - Revised
Panda Express at 9225 Kingston Pike – Knoxville, TN**

Mr. Flake,

As requested, I am writing this letter to provide a summary of my traffic engineering evaluation of the proposed Panda Express fast-food restaurant located at 9225 Kingston Pike in Knoxville, TN. The project site is located within the existing Landings at Cedar Bluff shopping center development. The scope of this traffic engineering evaluation was limited to a review of the proposed development, site plan, and vehicular trip generation calculations per the proposed project. As requested by Knoxville-Knox County Planning (Planning), the proposed development's trip generation has been compared to the original development plan for the Kroger Development. This scope did not include any traffic counts or data collection of the adjacent roadways and intersections, and the scope did not include any capacity analyses of adjacent intersections. As indicated by Planning on the Transportation Impact Analysis Scope Determination Form, the adjacent street intersections are fully built-out and will not need any further modifications at this time.

Development Details

According to the information provided, the proposed Panda Express will have the following characteristics:

- Approximately 2,300 SF Building
- Drive-through Window
- Indoor Seating for approximately 68 People
- 43 Parking Spaces
- The proposed fast-food restaurant development will be located within the existing parking lot on the east side of the Kroger Building at the Landings at Cedar Bluff shopping center.
- Vehicular access for the proposed fast-food restaurant will be provided through navigating the internal network within the existing shopping center development. The most direct access will be provided by the existing right-in/right-out access driveway on Cedar Bluff Road, which will provide direct access into the proposed Panda Express parking lot and into the drive-through line. The existing right-in/right-out access on Cedar Bluff Road primarily provides service and loading access to the rear of the Kroger Building.

The location of the proposed Panda Express is presented in Figure 1 below along with a table that compares the current shopping center and outparcels to the development plan in the original TIS prepared in 2010, which was provided by the City. In order to identify existing building sizes for comparison to the original site plan, the property details from the Knox County Tax Assessor's records were referenced for each portion and building of the existing development.

Figure 1: Location Map for Panda Express at 9225 Kingston Pike (Landings at Cedar Bluff)



Current Buildout for The Landing at Cedar Bluff			Original Site Plan Proposed Per 2010 TIS		
Site Label (As Noted Above)	Current Land Use	Size	Site Plan Outparcel Label	Planned Land Use	Size
A	Drive-in Bank	3,016 SF	Outparcel 1	Drive-in Bank	4,000 SF
B	High Turnover Restaurant	7,688 SF	Outparcel 2	Fast-food Restaurant	4,000 SF
			Outparcel 3	Drive-in Bank	4,000 SF
C	Medical Office	4,471 SF	Outparcel 4	High Turnover Restaurant	6,000 SF
	Retail	3,932 SF			
D	Retail Shops 1A	10,500 SF	Shops 1A	Retail Shops/Shopping Center	31,360 SF
E	Retail Shops 1B	7,420 SF	Shops 1B	Retail Shops/Shopping Center	
F	Shopping Center (Kroger)	119,231 SF	Kroger plus Future Expansion	Shopping Center (Kroger)	116,369 SF
G	Fuel Center (Kroger)	14 Pumps	Kroger Fuel Center	Fuel Center (Kroger)	14 Pumps
H	Proposed Fast-Food Restaurant with Drive- through Window (Panda Express)	2,300 SF	Shops 2	Retail Shops/Shopping Center	12,000 SF
Total	--	158,558 SF	Total	--	177,729 SF

As shown in the previous comparison table and location map in Figure 1, the current build-out of the Landings at Cedar Bluff is very close to the original proposed site plan for the total development. The major difference is that the Shops 2, which were planned to be approximately 12,000 square feet on the east side of the Kroger Store, were not developed with the Kroger building. Also, the Shops 1 were built out approximately 13,440 square feet less than originally planned. The Panda Express is proposed to be in the approximate location of the Shops 2; however, the site layout and building size is much different to accommodate a fast-food restaurant with drive-through window. Out-parcels 2 and 3 were combined into one development of a high-turnover sit-down restaurant. In total and without the proposed Panda Express, the Landings at Cedar Bluff has built out approximately 21,471 square feet less than was originally planned according to the original TIS from 2010.

Trip Generation and Comparison

A trip generation process was used to estimate the amount of vehicular traffic that is expected to be generated by the proposed Panda Express restaurant. Trip generation rates for the land use were taken from ITE's *Trip Generation Manual, 10th Edition* for Land Use Code 934: Fast-Food Restaurant with Drive-Through Window.

As shown in Table 1 below, the proposed fast-food restaurant development is expected to generate approximately 117 vehicle trips during the Midday peak hour, and 75 vehicle trips during the PM peak hour. The traffic generation in Table 1 accounts for both new trips and pass-by trips that will be expected for the proposed fast-food restaurant.

Table 1: Trip Generation for Panda Express at 9225 Kingston Pike

Land Use	Size	Trip Generation						
		Weekday Daily Traffic	Midday Peak Hour			PM Peak Hour		
			Total	Enter	Exit	Total	Enter	Exit
Fast-Food Restaurant with Drive-Through Window (ITE Land Use Code 934)	2,300 SF	1,083	117	61	56	75	39	36

Note: The Trip Generation above does not account for any pass-by traffic.

The original traffic study for the Landings at Cedar Bluff was prepared by Wilbur Smith (now CDM Smith) in 2010. The original traffic study was provided to Burch Transportation by the City for the purposes of conducting a comparison of the trip generations of the previously proposed development and the current development as built-out plus the proposed Panda Express development.

Table 2 presents the trip generation for the original site plan per the 2010 Traffic Study, which included a Kroger Store and Shops primary development 159,729 square feet in size with a Kroger Fuel Center with 14 fueling positions, and 4 out parcels assumed to be 2 restaurants and 2 banks. As shown in Table 2, the total development was estimated to generate approximately 1,437 total vehicle trips during the Midday peak hour and 1,473 total vehicle trips during the PM peak hour. The original traffic study assumed 15% of the Kroger Store and Shops would be pass-by traffic and 45% of the outparcels and fuel center would pass-by traffic. This resulted in approximately 1,013 new Midday trips and 1,065 new PM trips.

Table 2: Trip Generation Projections for Original Site Plan
(Data from 2010 Traffic Study – Table 4)

Land Use	ITE Land Use Code ¹	Size	Daily Trips	Midday Peak Hour	PM Peak Hour
Kroger Store and Shops	820	159,729 SF	9,210	769	871
Kroger Fuel Center	944	14 Pumps	2,360	158	194
Drive-In Bank (Outparcel 1)	912	4,000 SF	590	107	103
Drive-In Bank (Outparcel 3)	912	4,000 SF	590	107	103
Fast-Food Restaurant (Outparcel 2)	934	4,000 SF	1,980	185	135
High Turnover Restaurant (Outparcel 4)	932	6,000 SF	760	111	67
TOTAL TRAFFIC	--	177,729 SF²	15,490	1,437	1,473
<i>Pass-by Traffic³</i>	--	--	<i>4,209</i>	<i>424</i>	<i>408</i>
<i>Primary (New) Traffic</i>	--	--	<i>11,281</i>	<i>1,013</i>	<i>1,065</i>

Notes:

1. Trip Generation calculations in 2010 Traffic Study were based on ITE's *Trip Generation Manual*, 8th Edition. The original Traffic Study cited Land Use Code 829 for the Kroger Store and Shops; however, it was likely meant to be Land Use Code 820 for Shopping Center. There is not Land Use Code 829 in the current 10th Edition manual or the previous 8th Edition.
2. Total development square footage does not include the Kroger Fuel Center, which has trip generation projections based on number of fueling positions (pumps).
3. Assumes 15% pass-by traffic for shopping center land use and 45% pass-by traffic for outparcels and fuel center.

In order to make a comparison of the original site plan and current buildout and proposed Panda Express development, the trip generation was calculated for the original site plan using the current rates in ITE's *Trip Generation*, 10th Edition. Table 3 presents the original site plan using the current trip generation rates. The same pass-by percentages were applied as in the original traffic study.

Table 3: Trip Generation Projections for Original Site Plan
(Using Current Trip Generation Rates from ITE's *Trip Generation Manual*, 10th Edition)

Land Use	ITE Land Use Code ¹	Size	Daily Trips	Midday Peak Hour	PM Peak Hour
Kroger Store and Shops	820	159,729 SF	8,266	791	768
Kroger Fuel Center	944	14 Pumps	2,408	147	196
Drive-In Bank (Outparcel 1)	912	4,000 SF	449	59	82
Drive-In Bank (Outparcel 3)	912	4,000 SF	449	59	82
Fast-Food Restaurant (Outparcel 2)	934	4,000 SF	1,884	204	131
High Turnover Restaurant (Outparcel 4)	932	6,000 SF	673	84	59
TOTAL TRAFFIC	--	177,729 SF²	14,129	1,344	1,318
<i>Pass-by Traffic³</i>	--	--	<i>3,879</i>	<i>367</i>	<i>363</i>
<i>Primary (New) Traffic</i>	--	--	<i>10,250</i>	<i>977</i>	<i>955</i>

Notes:

1. Trip Generation calculations in 2010 Traffic Study were based on ITE's *Trip Generation Manual*, 8th Edition. The original Traffic Study cited Land Use Code 829 for the Kroger Store and Shops; however, it was likely meant to be Land Use Code 820 for Shopping Center. There is not Land Use Code 829 in the current 10th Edition manual or the previous 8th Edition.
2. Total development square footage does not include the Kroger Fuel Center, which has trip generation projections based on number of fueling positions (pumps).
3. Assumes 15% pass-by traffic for shopping center land use and 45% pass-by traffic for outparcels and fuel center.

As previously mentioned, the Landings at Cedar Bluff shopping center development has built-out similar to the original site plan; however, there have been some slight differences in land uses and building sizes. Table 4 presents the Trip generation projections for the Landings at Cedar Bluff based on the current development plus the proposed Panda Express development. As mentioned, the property details from the Knox County tax assessor's records were referenced to identify the existing square footage for each portion and building of the existing development for the purposes of comparing to the original plan and for traffic generation. Trip generation calculations are based on ITE's *Trip Generation Manual, 10th Edition*.

Table 4: Trip Generation Projections for Current Buildout Plus Proposed Panda Express

Land Use	ITE Land Use Code ¹	Size	Daily Trips	Midday Peak Hour	PM Peak Hour
Kroger Store and Shops and Retail Uses ^{2,3}	820	141,083 SF	7,597	723	701
Kroger Fuel Center	944	14 Pumps	2,408	147	196
Drive-In Bank (Outparcel 1)	912	3,016 SF	367	44	62
High Turnover Restaurant (Outparcel 2 & 3)	932	7,688 SF	862	108	75
Medical Office (Outparcel 4)	720	4,471 SF	84	18	17
Panda Express Fast-Food Restaurant	934	2,300 SF	1,083	117	75
TOTAL TRAFFIC		158,558 SF⁴	12,401	1,157	1,126
<i>Pass-by Traffic⁵</i>			3,264	294	286
<i>Primary (New) Traffic</i>			9,137	863	837

Notes:

1. Trip Generation calculations are based on ITE's *Trip Generation Manual, 10th Edition*.
2. To be consistent with the original Traffic Study, trip generation for the Kroger Store and Shops is based on the shopping center land use instead of separating out the supermarket land use from the general retail.
3. The retail square footage for Outparcel 4 (3,932 sf) is included with the Kroger Store and Shops and retail uses trip generation.
4. Total development square footage does not include the Kroger Fuel Center, which has trip generation projections based on number of fueling positions (pumps).
5. Assumes 15% pass-by traffic for shopping center land use, 45% pass-by traffic for restaurant, bank and fuel center land uses, and 0% for Medical Office land use, which is consistent with original traffic study.

Table 5 shows the comparison of the original site plan and the current buildout plus the proposed Panda Express development. As shown, the Landings at Cedar Bluff as built out generates less traffic than originally planned even with the addition of the proposed Panda Express.

Table 5: Comparison of Trip Generation Projections for Site Buildout

Summary	Size (SF)	Daily Traffic (vpd)	Midday Peak Hour	PM Peak Hour
Original Site Plan (Table 3)	177,729	14,129	1,344	1,318
Current Buildout Plus Panda Express (Table 4)	158,558	12,401	1,157	1,126
Difference	-19,171	-1,728	-187	-192
Percent Difference	-10.8%	-12.2%	-13.9%	-14.6%

Conclusions

In summary, the proposed Panda Express is expected to generate approximately 117 vehicle trips during the Midday peak hour and 75 vehicle trips during the PM peak hour. The proposed development of a Panda Express within the existing Landings at Cedar Bluff shopping center development is expected to fall within the trip generation projections that were originally contemplated and approved for the site. As presented in this transportation impact letter, the total shopping center has been built out at approximately 12% less building square-footage, which results in less peak hour and daily traffic generation. With the proposed Panda Express, the total building square-footage will be nearly 11% less than the original proposed development plan as analyzed in the original TIS. Therefore, the recommendations of the original traffic study for the entire development will continue to be valid, and no additional traffic analyses for the site and proposed Panda Express should be necessary.

The primary vehicular site access for the Panda Express site will be via an existing right-in/right-out driveway on Cedar Bluff Road. Traffic will enter the drive-through from the back of the site either by entering from Cedar Bluff Road or by circulating from within the Landings at Cedar Bluff shopping center and through the Panda Express parking lot. Exiting traffic will be able to circulate through the shopping center to one of the primary access points on Cedar Bluff Road or Kingston Pike or by exiting from the right-in/right-out access drive. If exiting the drive-through line, vehicles can easily circle through the Panda Express parking lot to the right-in/right-out access onto Cedar Bluff Road. Very little conflict is expected since the site is on the edge of the shopping center development. The on-site traffic control should include stop lines and stop signs at the drive-through and parking lot exit points. The site plan also includes wayfinding signage to identify the site circulation.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Burch Transportation, LLC



Amy Burch, P.E.

