



Memorandum

To: Bill Judge, PE
From: Lyle Overcash, PE
Subject: Rezoning Memorandum – Kent Corner
Date: February 11, 2013

The purpose of this memo is to summarize the potential maximum trip generation associated with the proposed Kent Corner development and determine the ultimate average daily traffic on adjacent streets with the proposed site plan versus the maximum rezoning scenario.

Project Background

The proposed project is a redevelopment of an existing site located in the southeast quadrant of the Kent Street and West Chapel Hill Street intersection. The existing development consists of a 3,625 square-foot (sf) Community Center, a 2,830 sf Outreach Ministry, a 1,660 sf Day Care and eight (8) Residential units. The proposed redevelopment will include 40,000 square feet of general office and a 10,000 square-foot grocery store.

Proposed Site Trip Generation

Given that this project is a redevelopment of an existing site, the net new trips generated will be based on the difference between the trips generated by the proposed development and the existing site. Trip generation for both the existing and proposed land uses is calculated based on the methodologies published in the *ITE Trip Generation Manual, 9th Edition*. Table 1 summarizes the resulting trip generation for the proposed development for the AM and PM peak hours.

Table 1: Kent Corner Trip Generation Summary*

ITE Land Use Code	USE	Units	ITE MANUAL RATES**						
			ADT	AM Peak			PM Peak		
				Enter	Exit	Total	Enter	Exit	Total
495	Recreational Community Center	3,625 sf	123	5	2	7	5	5	10
560	Church	2,830 sf	26	1	1	2	1	1	2
565	Day Care	1,660 sf	123	11	9	20	9	11	20
220	Apartments	8 units	53	1	3	4	3	2	5
Totals			325	18	15	33	18	19	37
710	General Office	40,000 sf	441	55	7	62	10	50	60
850	Grocery Store	10,000 sf	1,022	21	13	34	48	47	95
Totals			1,464	76	20	96	58	97	155
Net New Trips			1,139	58	5	63	40	78	118

* No reductions taken for Internal Capture or TDM measures, such as walking, biking, and transit, that would likely result in fewer trips

** ITE Trip Generation Manual, 9th Edition

Maximum Rezoning Trip Generation

This is a hypothetical exercise to determine what the increase in daily traffic that would be experienced on adjacent roadways under the proposed rezoning for the site. This process is similar to City of Durham Planning staff reports for projects going through the City for rezoning approval. Under the proposed rezoning, staff has determined that two (2) fast-food restaurants could be constructed on the site. Staff estimated a size of 5,000 square feet (sf) per restaurant, for a total of 10,000 sf. Trip generation for the fast-food restaurant land use is calculated based on the methodologies published in the *ITE Trip Generation Manual, 9th Edition*. Table 2 summarizes the resulting trip generation for the hypothetical fast-food restaurant situation for the AM and PM peak hours.

Table 2: Maximum Trip Generation of Proposed Rezoning

AM Peak Hour Total Trips						
ITE Land Use Code	USE	Units	ITE MANUAL RATES*			
			ADT	AM Enter	AM Exit	AM Total
934	Fast Food Restaurant with Drive-Thru Window	10,000 sf	4,961	232	222	454
<i>Total Trips</i>			<i>4,961</i>	<i>232</i>	<i>222</i>	<i>454</i>
AM Peak Hour Pass-By Trips						
ITE Land Use Code	USE	Pass-By Percentage	ITE MANUAL RATES*			
			ADT	AM Enter	AM Exit	AM Total
934	Fast Food Restaurant with Drive-Thru Window	49%	-	112	112	224
<i>Total Trips</i>			<i>-</i>	<i>112</i>	<i>112</i>	<i>224</i>
AM Peak Hour Non-Pass-By Trips						
ITE Land Use Code	USE	Units	ITE MANUAL RATES*			
			ADT	AM Enter	AM Exit	AM Total
934	Fast Food Restaurant with Drive-Thru Window	10,000 sf	4,961	120	110	230
<i>Total External Trips</i>			<i>4,961</i>	<i>120</i>	<i>110</i>	<i>230</i>
PM Peak Hour Total Trips						
ITE Land Use Code	USE	Units	ITE MANUAL RATES*			
			ADT	PM Enter	PM Exit	PM Total
934	Fast Food Restaurant with Drive-Thru Window	10,000 sf	4,961	170	157	327
<i>Total Trips</i>			<i>4,961</i>	<i>170</i>	<i>157</i>	<i>327</i>
PM Peak Pass-By Trips						
ITE Land Use Code	USE	Pass-By Percentage	ITE MANUAL RATES*			
			ADT	PM Enter	PM Exit	PM Total
934	Fast Food Restaurant with Drive-Thru Window	50%	-	82	82	164
<i>Total Pass-By Trips</i>			<i>-</i>	<i>82</i>	<i>82</i>	<i>164</i>
PM Peak Hour Non-Pass-By Site Trips						
ITE Land Use Code	USE	Units	ITE MANUAL RATES*			
			ADT	PM Enter	PM Exit	PM Total
934	Fast Food Restaurant with Drive-Thru Window	10,000 sf	4,961	88	75	163
<i>Total External Non-Pass-By Trips</i>			<i>4,961</i>	<i>88</i>	<i>75</i>	<i>163</i>

* ITE Trip Generation, 9th Edition

As depicted in Table 2, the maximum ADT (Average Daily Traffic) projected with the rezoning would be approximately 4,961 vehicles per day (vpd), without adjustments for pass-by trips. Pass-by trips are vehicles that are already present along the roadways adjacent to the site and would choose to visit a restaurant at this location. The *ITE Trip Generation Manual* estimates approximately 50% of the AM and PM peak hour traffic are pass-by trips. Daily estimates of pass-by trips are not available, but could certainly be expected. Therefore, by subtracting the AM and PM peak hour pass-by trips from the total ADT yields 4,573 vpd, which is a conservative estimate.

The adjusted daily estimate of 4,573 vpd was then distributed to the adjacent street system as depicted in the following figure. Only one ADT is available from NCDOT in the immediate study area, 12,000 vpd on Chapel Hill Street in 2011, just to the north of the site. Based on the most recent turning movement count from the City of Durham (2008), ADTs were estimated for the other two legs of the adjacent intersection of Kent Street and Chapel Hill Street. Volumes to and from Gattis Street were negligible in this exercise. The distribution percentages were based on the ADTs of the adjacent roadways:

- 15% to and from Kent Street to the south
- 35% to and from Chapel Hill Street to the west
- 50% to and from Chapel Hill Street to the east

The resulting ADTs for both the proposed site plan scenario and the hypothetical rezoning scenario are depicted in the last panel of the figure. As shown in the figure the highest ADT is experienced just north of the site along Chapel Hill Street, which is currently 12,000 vpd. With the proposed site, it is projected to increase to just 12,732 vpd. With the rezoning, it could theoretically increase to 14,287 vpd. The City of Durham estimates the capacity of this roadway to be 14,600 vpd. Therefore, with either the proposed site plan or the rezoning exercise, the projected volume would remain less than the current roadway capacity.



