

November 17, 2015

Ms. Tarren Barrett
Transportation Engineer
Knoxville-Knox County MPC
City/County Building, Suite 403
400 Main Street
Knoxville, TN 37902

RE: Black Road Subdivision – REVISED Traffic Impact Evaluation Letter
Knox County, Tennessee

Dear Ms. Barrett:

This letter is provided in order to summarize a traffic impact evaluation that was conducted for the referenced proposed subdivision. Traffic volumes, pavement width and crash history along Black Road in the vicinity of the proposed project were all included as part of this evaluation.

Traffic Volumes

A traffic count was conducted on the study section of Black Road in October 2014. This count, a copy of which is attached, provided a raw 24 hour volume of 369 vehicles. Applying ADT correction factors for the two days that this count covered (Thursday October 30 and Friday October 31) and a growth rate of 2.0 percent, the estimated 2015 ADT is 330 vehicles. Expanding this ADT to year 2020 by applying the 2.0 percent growth rate for 5 years yields an estimated year 2020 background traffic ADT of 364.

A small subdivision consisting of 35 single family detached units has been previously approved for the extreme west end of Black Road. Utilizing the fitted curve equation from the *ITE Trip Generation Manual, 9th Edition* (Code 210, page 296), the estimated number of newly generated weekday trips is 400. Given the proximity of this subdivision to Campbell Station Road and the fact that this development is school zoned for Farragut and Hardin Valley (high school), it is estimated that the trips will orient 70 percent to the west and 30 percent to the east. This yields an estimated number of new trips on the higher volume east end of Black Road of 120

The proposed Black Road subdivision includes 55 single-family detached housing units. Utilizing the fitted curve equation from the *ITE Trip Generation Manual, 9th Edition* (Code 210, page 296), the estimated number of newly generated weekday trips is 606. This subdivision will orient more to the east than the one discussed above. Therefore, assuming a conservative orientation of 80 percent of the newly generated traffic to the east on Black Road from the project site, this yields an estimated number of new trips on the higher volume east end of Black Road of 485.

Combining the year 2020 estimated ADT of 364 with the estimated generated trips of 120 and 485 for the two proposed subdivisions, the future year estimated ADT on Black Road, east of the project site, is 969. This is the ADT that would be expected on this section of roadway if both proposed subdivision projects are fully built-out and occupied.

Pavement Width

The pavement width on Black Road was field measured at several locations. The minimum measured width was 17 feet, with the majority being 18 feet or slightly more. The wider measurements tended to be where the roadway has been recently refurbished and overlaid. In accordance with the *Knox County, Tennessee Strategic Transportation Plan Needs Assessment Report, December 2014*, the recommended maximum ADT for a 17 foot width road is 1000 vehicles and for an 18 foot width is 2000 vehicles. Therefore, given the year 2020 estimated ADT of 969 with full project build-out, the existing pavement width of Black Road appears adequate for the proposed development.

Crash History

The latest available crash history data from Knox County is for years 2012 and 2013. This data did not identify any crashes on Black Road for this time period. In addition, in accordance with the latest ranking of roadway sections in Knox County for possible improvement, Black Road rated no. 556 out of 556 sections.

Conclusions

The existing pavement width of Black Road appears adequate for the proposed development. This conclusion is supported by both existing and projected traffic volumes, as well as the past crash history that does not show crash concerns.

Please do not hesitate to contact me with any questions or if you require additional information.

Sincerely,



Alan L. Childers, P.E.
Vice President

Attachments



24 Hour Volume, per Channel

#58 BLACK RD

Interval Start		
	11:00 AM	10
	12:00 PM	14
	1:00 PM	15
	2:00 PM	19
	3:00 PM	34
	4:00 PM	48
	5:00 PM	57
	6:00 PM	53
	7:00 PM	17
	8:00 PM	14
	9:00 PM	5
	10:00 PM	3
	11:00 PM	2
10/31/2014	12:00 AM	1
	1:00 AM	0
	2:00 AM	2
	3:00 AM	1
	4:00 AM	0
	5:00 AM	3
	6:00 AM	10
	7:00 AM	37
	8:00 AM	19
	9:00 AM	3
	10:00 AM	2
Total		369

Thursday 10/30
 Total = 291

Friday 10/31
 Total = 78

Peak Hours

12:00 AM - 12:00 PM

Started 7:00 AM
 Peak Volume 37
 Factor -

12:00 PM - 12:00 AM

Started 5:00 PM
 Peak Volume 57
 Factor

TDOT ADT Factors:

- Thursday in 2014 = 0.89 → 291
- Friday in 2014 = 0.27 → 78

Portion of Volume	Assumed Growth Rate 2014 to 2015	Adjusted Portion of ADT
291	2%	264
78	2%	66

2015 ADT Estimate = 330

* From TDOT 2011 Variation Factors

Single-Family Detached Housing (ITE Code 210)

Trips with fitted curve equation

Trip Ends on a Weekday:

$$\ln(T) = 0.92 \ln(x) + 2.72$$

where $x = 55$ dwelling units

$$\underline{T = 606 \text{ trips (303 enter : 303 exit)}}$$

(See attached sheet from ITE Trip Gen. Manual)

Other Approved Subdivision: (West End of Black Road)

$$\ln(T) = 0.92 \ln(35) + 2.72$$

$$\underline{T = 400 \text{ trips (200 enter : 200 exit)}}$$

Single-Family Detached Housing (210)

Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Number of Studies: 355
Avg. Number of Dwelling Units: 198
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.52	4.31 - 21.85	3.70

Data Plot and Equation

