

TRAFFIC IMPACT ANALYSIS

CIRCLE K
NC 51 (MATTHEWS-MINT HILL RD.) AT IDLEWILD RD.
Mecklenburg County, North Carolina



For Circle K of Charlotte, NC

December 2011

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EXECUTIVE SUMMARY

Circle K of Charlotte, NC proposes to reconstruct the existing Circle K located on the southeast corner of NC 51 (Matthews-Mint Hill Rd.) and Idlewild Rd. in the Town of Matthews. Currently, the Circle K consists of a convenience store of approximately 1,300 square feet, 8 vehicle fueling stations and one automated car wash. The Developer proposes to remove the automated car wash, reconstruct the convenience store to approximately 3,100 square feet and add 4 vehicle fueling stations. For this study, the site is assumed to be redeveloped within a one year time period.

This report provides an analysis of the traffic operations within the area of influence. It provides recommended access management for the site and intersection improvements needed for mitigating traffic impacts. This study evaluates existing traffic conditions in 2011 as well as in 2012 under No Build and Build scenarios, as approved by the North Carolina Department of Transportation (NCDOT) and the Town of Matthews Planning Department. This traffic impact analysis is valid at any time within the 2011-2012 interval.

The area of influence of the study site as provided by the Town of Matthews Planning Department and the NCDOT includes the following five intersections:

1. NC 51(Matthews-Mint Hill Rd.) and Idlewild Rd.
2. NC 51(Matthews-Mint Hill Rd.) and Existing Access 1
3. NC 51(Matthews-Mint Hill Rd.) and Existing Access 2

According to the current site plan, the Circle K site will be served by the existing access point on NC 51 and the existing access point on Idlewild Rd. Currently, both access points are full movement driveways. Due to the flat terrain of the proposed site, there are no sight distance issues at any of the existing access locations. The trip generation results indicate that the proposed redevelopment would generate approximately 6,511 daily trips, 199 morning-peak-hour trips and approximately 229 new afternoon-peak-hour trips.

The property on which the Circle K is located is currently zoned UD and will need to be rezoned due to site specific conditions that are currently in place. No offsite development (approved but not yet completed) is included in the study.

Currently, the signalized intersection of NC 51 and Idlewild Rd. will operate at an acceptable level of service (LOS) and under capacity during the morning and afternoon peak hours. Typically, a LOS of “D” or better is considered an acceptable LOS for traffic impact analysis and an intersection is said to be operating at capacity at a volume-to-capacity (v/c) ratio of 1.00.

In 2012 under the No-Build scenario, with the growth in the background traffic, LOS and delay deteriorated with the volume-to-capacity ratios being under 1.0 for NC 51 at Idlewild Road approaches.

In 2012 under the Build scenario, the existing signalized intersection of NC 51 and Idlewild Rd. will operate near capacity during both of the critical peak periods. Due to the queue lengths on NC 51, Access 1 is proposed to be converted to a right-in/right-out driveway. Under this scenario, Access 1 will operate at an acceptable LOS.

The results of the capacity analysis indicate that there is no need for major roadway improvements in order for NC 51 at Idlewild Rd. to have an acceptable level of service. The required improvements and corresponding responsibility are discussed in the next section.

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Improvements by Developer:

In analyzing the intersections within the study area, we recommend the following specific improvements. These roadway improvements are needed for access management and are directly attributable to the site traffic volumes for the specific movements. These improvements should be the responsibility of the developer.

NC 51 (Matthews-Mint Rd.) & Access 1

- Convert the existing full movement access driveway to a right-in/right-out driveway. Due to the pavement width of NC 51 and based on future plans by NCDOT at this location, it is recommended that bollards be installed along the centerline of NC 51 and a concrete island added to Access 1 to convert the driveway to a right-in/right-out operation.

Idlewild Rd. & Access 2

- Add additional pavement along Idlewild Rd. to create a three-lane section on Idlewild Rd. from the intersection of NC 51 to Hoods Village Road.

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PROPOSED DEVELOPMENT

Circle K of Charlotte, NC proposes to reconstruct the existing Circle K located on the southeast corner of NC 51 (Matthews-Mint Hill Rd.) and Idlewild Rd. in the Town of Matthews. Currently, the Circle K consists of a convenience store of approximately 1,300 square feet, 8 vehicle fueling stations and one automated car wash. The Developer proposes to remove the automated car wash, reconstruct the convenience store to approximately 3,100 square feet and add 4 vehicle fueling stations. For this study, the site is assumed to be redeveloped within a one year time period. A vicinity map is shown in Figure 1.

According to the current site plan (Figure 2), the Circle K site will be served by the two existing access points, one on NC 51 and the other on Idlewild Rd. Both are currently full movement driveways. Due to the flat terrain of the proposed site, there are no sight distance issues at any of the proposed access locations. The trip generation results indicate that the proposed redevelopment would generate approximately 6,511 daily trips, 199 morning-peak-hour trips and approximately 229 new afternoon-peak-hour trips. Pass-by reductions to the afternoon peak hour trips were obtained from Trip Generation, 8th Edition, Institute of Transportation Engineers.

AREA CONDITIONS

The area of influence of the study site as provided by the Town of Matthews Planning Department and the NCDOT includes the following three intersections:

1. NC 51 (Matthews-Mint Hill Rd.) and Idlewild Rd. (signalized)
2. NC 51 (Matthews-Mint Hill Rd.) and Access 1 (unsignalized)
3. Idlewild Rd. and Access 2 (unsignalized)

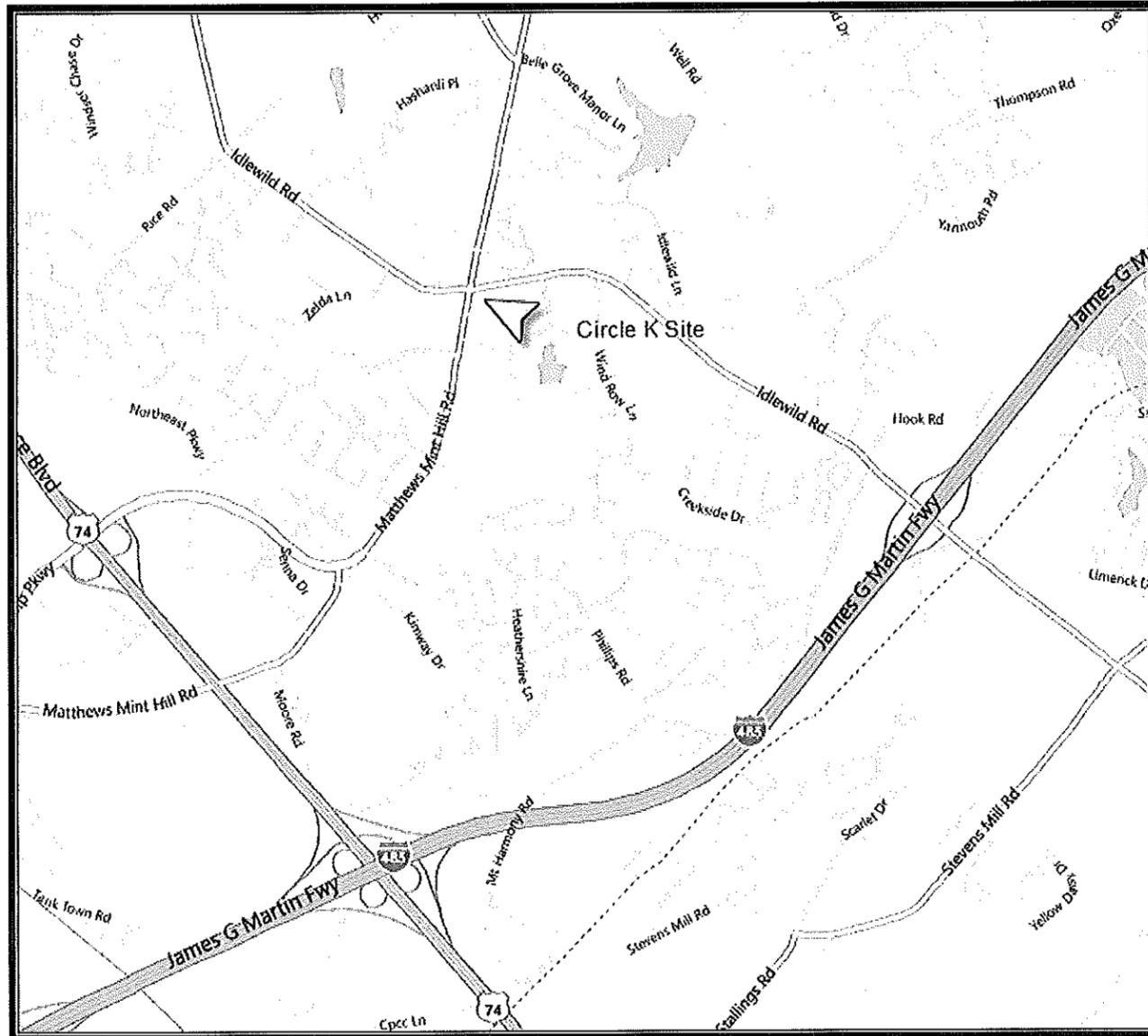
NC 51 is classified by NCDOT as a Major Thoroughfare and Idlewild Road as a Minor Thoroughfare. NC 51 connects the east side of the Town of Matthews to Mint Hill with one travel lane in either direction as well as turn lanes at major intersections and is posted for 45 miles per hour (mph). Idlewild Road has a mix of commercial and residential development and connects NC 51 to I-485. There are currently no funded transportation improvements in the study area.

Morning and afternoon peak period turning movement counts were conducted at the three existing intersections as from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM.

Count data is provided in the Appendix. The count data was grown by 3% annually, per NCDOT. Figure 3 shows the 2011 turning movement volumes for the morning and afternoon peak hours.

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Figure 1: Vicinity Map



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Figure 2: Site Plan

