

May 7, 2008

Kevin McLeod
President and CEO
Carolina Meadows, Inc.
100 Carolina Meadows
Chapel Hill, NC 27517
P: 919-370-7123

Subject: Traffic Assessment – Carolina Meadows Expansion
Chatham County, North Carolina

Dear Mr. McLeod:

This letter summarizes the findings of a Traffic Assessment (TA) prepared by Ramey Kemp & Associates, Inc. (RKA) for the proposed Carolina Meadows expansion located on Whippoorwill Lane east of Mount Carmel Church Road in Chatham County. The purpose of this study is to determine impacts to the surrounding transportation system created by traffic generated by full build out of the development.

Based on the preliminary plan, the expansion is proposed to consist of a new skilled nursing building, a new clinic and rehab facility, a relocated soccer field and the construction of 37 new residential villa buildings. It is our understanding that the only portion of the expansion that will result in a net increase in new trips is the 37 residential villa buildings. Each villa building will include 2 dwelling units; therefore, a total of 74 new dwelling units would be provided with the plan.

Access to the development is presently provided via two driveways on Whippoorwill Lane. The new villas will have access internally to the existing southeast driveway on Whippoorwill Lane; therefore, no new driveways are proposed on the surrounding road network. This driveway is referred to as Governors Road on the site map. Refer to Appendix A, Figure 1 for the site plan.

The study area for this project includes the following intersections:

- a. Mount Carmel Church Road & Whippoorwill Lane
- b. Moring/Main Campus Drive & Whippoorwill Lane
- c. Governors Road & Whippoorwill Lane
- d. Old Farrington Road & Whippoorwill Lane

All study intersections were analyzed under existing conditions (2008) and combined (2010) conditions with the proposed expansion in place.

Existing Traffic Volumes and Data Collection

Turning movement counts were conducted by RKA at the following intersections during the AM peak period (7:00 to 9:00) and PM peak period (4:30 to 6:30) on the dates indicated:

- | | |
|---|----------------|
| a. Mount Carmel Church Road & Whippoorwill Lane | April 28, 2008 |
| b. Moring/Main Campus Drive & Whippoorwill Lane | April 28, 2008 |
| c. Governors Road & Whippoorwill Lane | April 28, 2008 |
| d. Old Farrington Road & Whippoorwill Lane | April 30, 2008 |

Refer to Appendix A, Figure 2 for the existing AM peak hour traffic and Figure 3 for the existing PM peak hour traffic volumes. Existing traffic volumes were balanced between the study intersections.

Refer to Appendix B for copies of the raw traffic data.

Background (2010) Traffic Volumes

Background (2010) traffic volumes without the site were determined by projecting existing (2008) traffic volumes to the year 2010 using a compounded annual growth rate of 3.0%. Refer to Appendix A, Figures 4 & 5 for an illustration of the background (2010) AM peak hour and PM peak hour traffic volumes, respectively.

Trip Generation and Distribution

Traffic generated by the proposed Carolina Meadows Expansion was estimated utilizing methodology contained within the Institute of Transportation Engineers (ITE) *Trip Generation* manual, 7th Edition.

Carolina Meadows most closely represents attached senior adult housing which is described by ITE land use code 252 from the ITE *Trip Generation* manual, 7th Edition. As described by ITE, the community consists of residents that may or may not be retired and typically live independently of medical facilities and a centralized dining facility.

It is estimated that the site will generate approximately 258 total site trips (129 entering and 129 exiting) during an average 24-hour weekday period. Of this total, approximately 6 total site trips (3 entering and 3 exiting) will occur during the weekday AM peak hour, while approximately 8 total site trips (5 entering and 3 exiting) will occur during the weekday PM peak hour.

Refer to Table 1 for a detailed breakdown of the entering and exiting site traffic.

**Table 1
Site Trip Generation**

Land Use (Code)	Size	Average Daily Traffic (vpd)	AM Peak Hour (vph)		PM Peak Hour (vph)	
			Entering	Exiting	Entering	Exiting
Senior Housing - Attached (252)	74 Units	258	3	3	5	3
Total Trips		258	6		8	

Site trip distribution percentages were determined based on existing traffic patterns at the site driveways and engineering judgment. Trips generated by the development were distributed based on the trip distribution percentages. Refer to Figures 6 & 7 in Appendix A for the AM and PM peak hour site trips, respectively.

Combined (2010) Traffic Volumes

Combined (2010) traffic volumes were determined by adding the new site trips (Figure 6 & Figure 7) to the background traffic volumes (Figure 4 & Figure 5). Refer to Figures 8 & 9 in Appendix A for the combined (2010) AM peak hour and PM peak hour traffic volumes, respectively.

Capacity Analysis

Study intersections were analyzed using the methodology outlined in the 2000 Highway Capacity Manual (HCM) published by the Transportation Research Board. Capacity and level of service (LOS) are the design criteria for this traffic study. A computer software package, Synchro (version 7), was used to complete the analyses for all of the study area intersections.

Existing AM and PM peak hour traffic volumes at the study intersections were analyzed to determine the current levels of service. Combined AM and PM peak hour traffic volumes were analyzed to determine the expected levels of service once the development is in place. The capacity analysis results for each intersection are summarized in the LOS Summary Table attached to this letter. The detailed capacity analysis reports can be found in Appendix C.

Analysis indicates all intersections and movements operate at LOS C or better under existing, background, and combined conditions with the exception of the southbound approach of Old Farrington Road at Whippoorwill Lane.

Currently, the intersection of Old Farrington Road and Whippoorwill Lane operates with two-way stop sign control. The stop sign approaches are located on Old Farrington Road (northbound and southbound directions). Capacity analysis shows the southbound approach of

Old Farrington Road currently operates at LOS E in the AM peak hour and at LOS F in the PM peak hour.

Under background (2010) conditions without the new site trips, the southbound approach of Old Farrington Road operates at LOS F in both the AM and PM peak hours. With the addition of site trips under combined conditions, the approach continues to operate at LOS F; however, the approach delay is increased by only 1 second in the AM and PM peak hours.

Conclusions and Recommendations

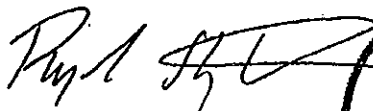
The purpose of this study was to determine impacts to the surrounding transportation system created by the new trips generated by the expansion of Carolina Meadows to include an additional 74 dwelling units. Study intersections were analyzed under existing (2008), background (2010) conditions without site trips, and combined (2010) conditions with site trips.

Based on the analysis results, all intersections and turning movements are expected to operate at LOS C or better during the AM and PM peak hours under combined (2010) conditions with build out of the expansion with the exception of the southbound approach of Old Farrington Road at Whippoorwill Lane. This approach currently operates at LOS F under existing conditions and is expected to continue to operate at LOS F in the future without the addition of site trips. Under combined conditions with new site trips, the delays for the southbound approach of Old Farrington Road are expected to increase by only 1 second in the AM and PM peak hours.

No improvements are recommended to be provided by the development at study intersections. Site trips generated by the expansion of the villas are expected to relatively small and would not have a significant impact on the surrounding transportation system.

If you should have any questions, please feel free to contact me at (919) 872-5115.

Sincerely,
Ramey Kemp & Associates, Inc.



Rynal Stephenson, P.E.
Transportation Manager



5-7-08

Attachments

cc: Mark Ashness, P.E., CE Group, Inc.

Level Of Service Summary Table

INTERSECTION	A P P R O A C H	Farrington (2008)		Background (2010) Without Site		Combined (2010) With Site	
		AM	PM	AM	PM	AM	PM
Mount Carmel Church Road at Whippoorwill Lane	WB NB SB	B [12.7] A [9.0] --	B [13.1] A [7.9] --	B [13.2] A [9.2] --	B [13.9] A [8.0] --	B [13.2] A [9.2] --	B [13.9] A [8.0] --
Moring/Main Campus Drive at Whippoorwill Lane	WB NB EB SB	A [0.5] B [10.2] A [0.4] A [9.7]	A [0.6] B [10.4] A [0.5] B [10.6]	A [0.4] B [10.4] A [0.5] A [9.8]	A [0.7] B [10.6] A [0.4] B [10.8]	A [0.4] B [10.4] A [0.5] A [9.8]	A [0.7] B [10.6] A [0.4] B [10.8]
Governors Road at Whippoorwill Lane	WB NB EB SB	A [4.0] B [10.7] A [0.8] C [16.7]	A [4.4] A [9.6] A [0.5] B [13.4]	A [4.0] B [11.0] A [0.8] C [17.6]	A [4.5] A [9.7] A [0.5] B [13.9]	A [3.9] B [11.0] A [0.8] C [17.0]	A [4.4] A [9.7] A [0.7] B [14.3]
Old Farrington Road at Whippoorwill Lane	WB NB EB SB	A [0.2] B [14.1] A [0.3] F [108.9]	A [0.1] C [15.3] A [0.6] E [40.4]	A [0.2] B [14.7] A [0.3] F [164.1]	A [0.1] C [16.0] A [0.6] F [54.1]	A [0.2] B [14.7] A [0.3] F [165.9]	A [0.1] C [16.1] A [0.6] F [55.3]

[] indicates control delay for each approach.